

OUTPATIENT RESOURCE COSTING STUDY

FINAL REPORT

VOLUME I

AUGUST 7, 1995



"The project was funded under grant #18-C-90123/3-02 from the Health Care Financing Administration. The opinions expressed are those of the Center for Health Policy Studies and do not necessarily reflect the Health Care Financing Administration's views or policy positions."

Prepared by: Center for Health Policy Studies
Henry Miller, Ph.D., Project Director
William Kelly
Horen Boyagian
John McCue
JoAnna Burnette

ACKNOWLEDGEMENTS

The study described in this report was completed by the Center for Health Policy Studies (CHPS) under Cooperative Agreement No. 18-C-90123/3-01 which was awarded by the Health Care Financing Administration (HCFA). The study required the cooperation of several hospitals, ambulatory surgery centers and medical groups. Staff members at these health care provider organizations made an important contribution to the study's success. In addition, the CHPS team was assisted by efforts made by both a clinical panel of physicians and nurses who assisted in the development of guides for the preparation of resource profiles and a Technical Advisory Panel that reviewed several study products. These efforts were also critical to the study's success.

Several HCFA staff members contributed to the study through their reviews of methods and findings. Most importantly, Mark Wynn of the Office of Research and Demonstrations worked closely with the study team and helped to shape several components of the study methodology. Michael Henesch served as Project Officer for much of the study and was a key advisor.

This report was prepared by Dr. Henry Miller who served as CHPS' Project Director. Substantial assistance was provided by Dr. Mary Reynolds who completed much of the statistical analysis and contributed to the final report. Several other members of CHPS' staff made important contributions to the study. William Kelly assisted in the development of the study methodology and in the management of the study. JbAnna Younts managed the study database and played a key role in securing provider cooperation. John McCue analyzed much of the data and Thomas Yates completed much of the programming. Data were collected by Richard Woodhouse, Emily Platukis, Patricia HasBrouck and Elsa Kellberg.

The opinions and conclusions expressed in this report are those of the authors and do not necessarily represent those of the Health Care Financing Administration.

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1. INTRODUCTION

1. INTRODUCTION

1.1 OVERVIEW OF REPORT

The Center for Health Policy Studies (CHPS) is pleased to present this final report on its study of outpatient resource costs. The study was conducted for the Health Care Financing Administration (HCFA) (Grant No. 18-C-90123/3-01) and was completed over a three year period. The purpose of the study was to evaluate the reliability of the resource costing methodology for outpatient procedures and diagnoses. Resource costs, which are fully defined later in this chapter, are costs of specific health care services that are measured using a combination of cost accounting and management engineering approaches. Efforts focused on the identification of resource costs for specific CPT-4 procedure codes and ICD9-CM diagnosis codes. Costs were identified for approximately 500 codes that include high volume ambulatory surgery, laboratory, radiology and other diagnostic procedures. In addition, costs were identified for selected types of medical visits. Data were collected from a random sample of facilities throughout the United States including hospitals, ambulatory surgery centers and physician practices. Limitations inherent in the study's sample size and comprehensiveness are discussed in Chapter 2.

This study demonstrates the feasibility of resource costing as a method of identifying the costs of specific health services. In addition, it provides data to initiate assessments of differences in costs for the same procedure across settings. Data that identify the components of direct and indirect costs for procedures and visits, including labor costs, supply costs, drug costs and equipment costs are presented. Analyses of these costs are included in this report. The database from which these analyses have been prepared has been submitted separately to HCFA.

The report is presented in seven chapters and several appendices. This first chapter presents the purpose of the study and describes the conceptual foundation of resource costing. Resource costing has been used in other studies, but its methods have not been fully documented previously.

The methodological approach used for the study is presented in the second chapter. Research questions addressed by the study are discussed and issues that the study could not address are identified. General cost models of outpatient services are presented to provide a foundation for understanding data collection and analysis methods. This study uses definitions of direct and indirect costs that are especially useful for analysis, but which do not necessarily match traditional definitions. For this reason, attention is focused on definitions in this chapter. The chapter also includes a description of the process used to select procedures and medical visits for study. A list of procedures and medical visits included in the study is presented in Appendix A. The study's sample design is presented in detail in this chapter and the list of providers that participated in the study is presented in Appendix B. The chapter also includes a description of the data collection and analysis approaches. Data collection instruments are included in Appendix C.

Resource costs of outpatient services are presented in Chapter 3. Resource requirements are discussed and differences between expected resource use and actual resource use are reviewed. Unit costs of resources are then presented to provide the foundation for the discussion of direct costs. Data on the ten highest volume procedures are the focal point of analyses that are presented. Indirect costs are also presented; analyses identify indirect costs for high volume procedures. Total resource costs are also presented for these procedures.

Comparisons of costs across outpatient settings are presented in the fourth chapter. Discussions focus on differences in direct, indirect and total costs for hospital outpatient departments (OPDs), ambulatory surgery centers (ASCs) and physician practices. Most analyses focus on differences between OPDs and ASCs because the procedure mix encountered in physician practices was found to differ substantially from other settings. Causes for variations across settings are also discussed.

The fifth chapter is a discussion of costs incurred when more than one procedure is performed during a visit. The methods for the use of study data to estimate costs of multiple services provided during a single visit are described. Costs for a small number of procedure combinations are presented.

In the sixth chapter, resource costs are compared to other cost measures. Analyses specifically focus on comparisons to charges, existing HCFA ASC payment rates and existing RBRVS overhead components. Explanations of differences identified in comparisons are presented. The chapter includes comparisons of resource costs to reported costs, using Medicare Cost Reports and data from the National Center for Health Statistics' National Ambulatory Medical Care Survey (NAMCS). Procedure-specific cost comparisons and measures of relative weights that use resource costs and costs derived from Medicare Cost Reports are presented.

The final chapter is a summary that discusses the limitations of the study, the need for additional research and uses of the study's data base. The potential use of the database to provide standard costs for outpatient services is also discussed.

1.2 PURPOSE OF THE STUDY

HCFA's implementation of an outpatient prospective payment system requires a thorough knowledge of costs of outpatient services. To encourage appropriate provider behavior, payment rates should reflect resource use. If payment rates are set disproportionately high for some procedures or services and disproportionately low for others, providers have incentives to offer some services excessively and others infrequently. Although payment rates for Medicare's inpatient prospective payment system were established using hospital charges, there is no evidence of a relationship between charges for outpatient services and resource use. Unlike inpatient charges per case, outpatient charges per visit consist of a small number of charges, some of which are higher and some of which are lower than resource costs. Small numbers of charges do not provide opportunities to offset distortions in individual service charges and thus create the possibility that charges do not accurately reflect resource use. Therefore, the use of

charges to set relative weights for outpatient payment may cause undesired provider responses. There is, then, a need for a data base of resource costs to be used as input in the effort to develop prices for an outpatient prospective payment system. The data base developed in this study is an important step forward in meeting this need. The study's data base, however, is based on a limited sample and is intended as a research effort that provides some data that can be used to evaluate prices for outpatient services, but focuses more on determining the feasibility of using resource costing as a tool to measure service-specific outpatient costs.

Several aspects of the study's objectives must be understood before the methodological approach is presented. First, only facility costs are being investigated. Although physician labor costs are an important component of outpatient costs, they are not considered in this study. The Medicare program uses different methods to pay for professional and facility-related services.

The study focuses on the resource costs of CPT-4 coded procedures and ICD9 coded medical visits as they are categorized in the Ambulatory Patient Group (APG) patient classification system. The APG system serves as the basis of our sample of visit types. This system was developed under a HCFA grant for potential application in a Medicare outpatient prospective payment system. We chose APGs as the sampling framework for several reasons:

- The system is clearly policy relevant,
- Each group within the system is intended to be homogeneous both clinically and in terms of resources, i.e., CPT-4 and ICD9 codes within an APG reflect the resources of other codes in the group, and
- The system is comprehensive and includes procedures, medical visits, and ancillary services. Thus, a wide variety of medical and surgical services are included.

In addition to providing procedure/service-specific resource costs for a large number of procedures/services within the constraints of its sampling limitations, this study:

- Identifies direct and indirect costs by type for each procedure/service,
- Calculates differences in average resource use and unit costs on a procedure/service-specific basis across settings, i.e., hospital OPDs, ASCs and physician's offices,
- Investigates incremental costs of procedures when two or more procedures are performed during the same visit,
- Compares procedure/service-specific resource costs to other procedure/service-specific values including charges and current payment levels, and
- Compares aggregate resource costs to aggregate outpatient costs reported in Medicare Cost Reports and other sources of cost data.

Although all of these issues are addressed in this study, it is important to understand that there are priorities among objectives. It was most important for the study to test the resource costing methodology, to be used for research purposes in support of HCFA's overall objective of developing an outpatient PPS. These objectives are emphasized in the findings presented in this report.

The completion of this study also provided an opportunity for the further development of resource costing as a cost measurement approach. Although resource costing had been used in other studies, it was never fully developed for use for a category of services as comprehensive as all high volume outpatient services. The further development of resource costing methods was, itself, a prime objective of the study.

1.3 THE RESOURCE COSTING APPROACH

Although product cost accounting has been used in many industries for decades, its principles were not applied to health care organizations until recently. Instead, health care providers focused their attention on calculating the costs of institutions, departments and programs. Traditional accounting systems did not have the capability to calculate the costs of products, i.e., cost per case for inpatient care and cost per visit for outpatient care. In addition, the costs of the components of a case or a visit, such as the cost per day of routine care, costs of laboratory tests and costs of surgical procedures were not systematically calculated. Many providers conduct special studies using management engineering and cost accounting techniques to arrive at product or product-component costs, but these studies are not consistent in either their scope or their calculation methods.

During the past ten years, efforts have been made to introduce cost accounting systems for inpatient services in hospitals. These systems allow for the calculation of product and subproduct costs and can be extended to outpatient services, but few hospitals have taken this step. There are no widely used product cost accounting systems used by ambulatory surgery centers or physician practices although some individual providers have developed their own systems.

Resource costing was developed to fill the void created by the lack of cost accounting systems in health care. In the simplest sense, it is an approach that identifies the components of a health care activity, identifies the type and amount of resources used to complete the requirements of each component and attaches unit costs to each resource. Unit costs multiplied by resources used yields costs of resources and when these costs are summed, the cost of each component and the cost of the health care activity can be calculated.

Resource costing has been used in several prior studies conducted by the Center for Health Policy Studies. Three previous studies deserve special note. In 1982, a study for DHHS'

Office of the Assistant Secretary for Planning and Evaluation was undertaken.¹ In that study, resource costs for hospital-based clinics and emergency departments were compared to costs calculated in Medicare Cost Reports and it was found that inpatient cost reimbursement incentives led to an understatement of hospital outpatient costs. This study was replicated in 1990.² The updated study revealed that inpatient prospective payment and outpatient reimbursement incentives led to overstatements of outpatient costs in cost reports when compared to resource costs. The 1989 study was followed by a more specific study of the accuracy of Medicare Cost Reports in which inpatient reported costs were compared to resource costs.³ This study, which was conducted for the Prospective Payment Assessment Commission (ProPAC), documented significant differences between resource based costs and costs derived from charges.

Several other relevant studies have also been completed. In one study, costs for each of the Products of Ambulatory Surgery (PAS) were calculated using a resource costing approach.⁴ PAS is an outpatient classification system developed by the New York State Department of Health. Resource costing was also used to measure inpatient and outpatient costs of services provided to children in a study conducted for the National Association of Children's Hospitals and Related Institutions.⁵ Most recently, resource costing has been applied to a study of the costs of long-term care case management services provided by state agencies.⁶

Resource costing requires the completion of six steps. These steps are listed below and discussed in the paragraphs that follow. The six steps are:

- Development of a general model of the activity to be studied,
- Preparation of definitions for each variable, i.e., cost category, included in the model,
- Identification of the resources required for each cost category,
- Identification of the unit costs of each resource,

¹ Miller, H., Study of the Costs of Hospital-Based Outpatient Services, Columbia, MD, Center for Health Policy Studies, 1983.

² Miller, H., Balicki, B., et al, Replication of 1982 Study of Outpatient Costs in 25 Hospitals, Columbia, MD, Center for Health Policy Studies, 1990.

³ Miller, H., Balicki, B., et al, Study of the Accuracy of Medicare Cost Reports for Research and Policy Analysis, Columbia, MD, Center for Health Policy Studies, 1989.

⁴ Miller, H. and Kelly, W., Costs of the Products of Ambulatory Surgery, Columbia, MD, Center for Health Policy Studies, 1990.

⁵ Miller, H., Costs of Pediatric Inpatient Services, Columbia, MD, Center for Health Policy Studies, 1992.

⁶ Miller, H., Evaluation of the Case Management Function in Health Care in the Home Act Demonstration Program, Columbia, MD, Center for Health Policy Studies, 1995.

- Preparation of a resource profile for each activity that combines resource requirement and unit cost data, and
- Preparation of a standard resource profile and standard costs for each activity.

1.3.1 Development of a General Model

Resource costing begins with the development of a model that describes an activity. General models for ambulatory surgery, radiology services, laboratory services and medical visits are presented in Chapter 2. The models identify the resources required to provide a service and their interrelationship. In order to make them useful for cost analysis, they separate direct and indirect costs because the data collection and analysis process for these components differ. The model for ambulatory surgery is presented below to provide a foundation for discussion of the remaining steps in the resource costing process.

$$\begin{aligned}
 RC_a &= DRC_a + IDRC_a \\
 \text{Where: } RC_a &= \text{Resource Costs of Ambulatory Surgery} \\
 DRC_a &= \text{Direct Resource Costs of Ambulatory Surgery} \\
 IDRC_a &= \text{Indirect Resource Costs of Ambulatory Surgery} \\
 DRC_a &= L_a + S_a + D_a + P_a + SE_a \\
 \text{Where: } L_a &= \text{Ambulatory Surgery Labor Costs} \\
 S_a &= \text{Ambulatory Surgery Supply Costs} \\
 D_a &= \text{Ambulatory Surgery Drug Costs} \\
 P_a &= \text{Ambulatory Surgery Pathology Costs} \\
 SE_a &= \text{Ambulatory Surgery Special Equipment Costs}
 \end{aligned}$$

$$\begin{aligned}
 L_a &= N_a + t_a + o_a \\
 \text{Where: } N_a &= \text{Nursing Costs} \\
 t_a &= \text{Technician Costs} \\
 o_a &= \text{Other Personnel Costs}
 \end{aligned}$$

$$\begin{aligned}
 S_a &= s_a + i_a \\
 \text{Where: } s_a &= \text{Surgical Supply Costs} \\
 i_a &= \text{Surgical Instrument Costs}
 \end{aligned}$$

$$\begin{aligned}
 D_a &= p_a + a_a \\
 \text{Where: } p_a &= \text{Pharmaceutical Costs} \\
 a_a &= \text{Anesthesia Costs}
 \end{aligned}$$

$$\begin{aligned}
 IDRC_a &= IA_a + M_a + OP_a + H_a + E_a + SP_a \\
 \text{Where: } IA_a &= \text{Ambulatory Surgery Indirect Administration Costs} \\
 M_a &= \text{Ambulatory Surgery Maintenance Costs} \\
 OP_a &= \text{Ambulatory Surgery Plant Operation Costs} \\
 H_a &= \text{Ambulatory Surgery Housekeeping Costs} \\
 E_a &= \text{Ambulatory Surgery Non Procedure-Specific Equipment Costs} \\
 SP_a &= \text{Ambulatory Surgery Space Costs}
 \end{aligned}$$

The ambulatory surgery model is intended to include all possible variables to assure its utility for any ambulatory surgical procedure. It is, however, a general model. Subsequent discussions (Chapter 2) provide further insights into the definitions of specific costs and their classification in the study.

1.3.2 Preparation of Definitions for Each Variable Included in the Study

The next step in the development of resource costs is the preparation of definitions for each variable included in the model. Definitions need to be precise and in most instances of specific costs, definitions are self-evident. The definitions of direct and indirect costs, however, are less clear. Accountants typically classify costs as direct if they vary as the volume of a product increases or decreases. A similar definition is used in resource costing, but an effort is made to examine costs at a detailed level to classify as direct as much of total cost as possible. Classification of a cost as a direct cost eliminates the need to use allocation methods to attribute cost to a product. Allocation of costs is always less precise than direct attribution. For this reason, equipment costs, which would almost always be defined as indirect in traditional accounting, are separated into direct and indirect components in resource costing.

Direct equipment costs are costs associated with equipment that is only used for a specific procedure or a small number of related procedures. Indirect equipment costs include both costs that may be required to perform a procedure and costs of equipment used to support broad-based activities. For example, both the operating room equipment used for all surgery and office equipment used for billing are included as indirect costs. As discussed in the next chapter, allocation methods used for these types of equipment differ, which means that two levels of indirect costs are calculated. Some other costs are treated similarly. For example, administrative costs of surgical departments are allocated using a different formula than administrative costs associated with management of a hospital as a whole.

1.3.3 Identification of the Resources Required for Each Variable

Although it is possible to gather empirical data to identify resources used for each variable in the model, the data collection process would require a substantial management engineering effort. It would be necessary to conduct time and motion studies at a large number of facilities and offices. Such an effort was prohibitive in terms of cost and time required for this study. Instead, a normative approach for the identification of the resources required for each variable has been used.

Several approaches can be used to arrive at a normative determination of resources used. In the paragraphs that follow, approaches for the identification of direct resources are described. Indirect resources are separately identified through analyses of facility activities. A panel of experts that identifies resource requirements for each procedure/visit studied can be convened. Such a panel can either produce a definitive analysis or can narrow the range of resources to be considered. It is important to understand that there are alternative approaches for the performance of most procedures. A panel of clinical experts can identify a standard set of resources but it is highly likely that significant variations in that standard will be found in

practice. For this reason, it is most useful to have the panel identify a model for the resources that are required and then have that model reviewed by representatives of facilities that participate in the study. Such an approach was used for this study.

When facility representatives provide resource use data, the process is facilitated by the use of a resource profile that identifies types of resources required and allows for their categorization. A blank resource profile for an ambulatory surgery procedure is presented as Exhibit 1-1. The exhibit indicates that physician time is included in resource profiles although the profiles are used to measure facility cost, which does not include the costs of physicians' time. Physician time has been included in the profile to allow facility representatives to prepare a comprehensive profile and to provide data that can be used for validation of time used by other professionals for specific services. Resource profiles need to be completed by personnel who are familiar with the procedures studied. In the case of ambulatory surgery, profiles need to be completed by operating room nurses. Ambulatory surgery profiles are relatively easy to complete because most surgical facilities maintain files of resources preferred for use by specific surgeons. These files can be used for supplies, special equipment and drugs. The expert input of nursing staff is required for estimates of operating room and recovery room time. This approach allows for the identification of facility-specific resource use which permits analysis of differences in the use of resources across facilities.

1.3.4 Identification of the Unit Costs of Each Resource

Unit cost data are available from several sources. If the goal of the resource costing process is to identify facility-specific resource costs, it is necessary to gather unit cost data from providers participating in the study. A unit cost is required for each resource used in the completion of a procedure. Facility-specific unit costs are available from a variety of sources. Costs of labor are available from facility payroll records and can be converted into cost per minute values to be applied to minutes of time identified in resource profiles. Costs of supplies, drugs and anesthesia are available from invoices received for purchase of these items by the facilities studied. The process of gathering these data is tedious, but once a cost is identified, it is likely to be used for several procedures, which introduces efficiencies in the data gathering process. Equipment costs are generally available from depreciation records maintained by facilities. Indirect resource unit costs are available from the same sources as direct resource unit costs.

Experience has indicated that some unit costs will not be found in facility records. In these instances, data can be gathered from national and regional suppliers. Although these data are not facility-specific, they typically relate to resources that are infrequently used and for which, therefore, there is limited data available at facilities. In this study, this approach was used for some equipment and highly specialized supplies.

OUTPATIENT SURGERY RESOURCE USE PROFILE

[illegible]

Name _____

Generic Name

Brand Name

Amount

Include all pre-op, OR and recovery room drugs.

ANESTHESIA

Type (circle one)

- A. General
- B. Local
- C. Epidural
- D. Spinal
- E. Block
- F. IV Sedation
- G. Other _____

(indicate)

Generic Name

Brand Name

Amount

ANCILLARY TESTS (extraordinary tests required for procedure)

Lab / Pathology / Radiology

CPT-4 Code

Billed Separately?
(circle one)

[illegible]

PROTOCOL REVIEWED BY: _____
(initials)

1.3.5 Preparation of a Resource Profile for Each Activity that Combines Resource Requirements and Unit Costs

The resource profile is the primary analytic tool for the accumulation of resource costing information. Resource profiles identify resource requirements and unit costs and identify the calculations used to determine the cost of each resource, the cost of direct and indirect resources and the total resource cost of the activity under study. An example of a resource profile is presented in Exhibit 1-2.

1.3.6 Preparation of a Standard Resource Profile and a Standard Cost for Each Activity

Resource profiles such as Exhibit 1-2 are used to calculate costs of an activity in each facility studied. The final step in the resource costing process is the combination of profiles across facilities to arrive at standards for resource use and resource costs. In this study, mean costs for an activity across all facilities studied were measured. Standard resource profiles can be developed by returning to the expert panel and creating a normative standard and attaching unit costs to each of its resources. Such calculations have been completed in other studies.

EXHIBIT 1-2

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Labor minutes by operating phase	Pre1	Pre2	OR	Post1	Post2	Cost/Minute	Total Cost
Anesthesiologist.....	10	15	5	1	5	0.00000	0.00
Certified Registered Nurse Anesthetist (CRNA).....	20	5	5	5	0	0.00000	0.00
PATIENT.....	55	60	50	20	30	0.00000	0.00
Physician.....	0	25	38	0	0	0.00000	0.00
Registered Nurse (RN).....	5	15	110	10	20	0.47000	90.25

Total Direct Labor: 90.25

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
alcohol pad.....	2	0.05000	0.10
back table drape.....	1	1.74000	1.74
basin.....	4	0.25000	1.00
blade-Beaver #69.....	1	5.71000	5.71
blade-Beaver #75.....	1	3.71000	3.71
cannula-disposable.....	1	2.86000	2.86
corneal light shield.....	1	0.86000	0.86
drain-Weck.....	1	3.43000	3.43
drape-eye.....	1	9.71000	9.71
drape-utility.....	1	0.86000	0.86
EKG electrodes.....	3	0.23800	0.71
eye patch.....	2	1.28000	2.56
eye shield.....	1	1.14000	1.14
gauze 4x4 sterile.....	1 pkg of 10	0.57000	0.57
gloves-non sterile.....	2 pair	0.34000	0.68
gloves-surgical sterile.....	3 pair	0.76000	2.28
gown-surgical sterile.....	3	3.11000	9.33
head cover.....	7	0.10000	0.70
Inst wipe.....	1	1.68000	1.68
intraocular lens (IOL).....	1	238.00000	238.00
knife-Grieshaber.....	1	20.86000	20.86
mask-surgical.....	4	0.10000	0.40
Mayo stand cover.....	1	1.13000	1.13
microsponge.....	12	0.08900	1.07
needle protector.....	1	1.14000	1.14
needle-22 gauge Jelco.....	1	1.36000	1.36
needle-27 gauge.....	1	0.05000	0.05
needle-cystotome.....	1	2.29000	2.29
needle.....	10	0.05000	0.50
patient belongings bag.....	2	0.08000	0.16
phaco setup.....	1	10.00000	10.00
Q-tip.....	10	0.02000	0.20
shoe covers.....	6 pair	0.10000	0.60
Steri drape.....	1	4.25000	4.25
suture-ophth nylon 10-0.....	1	19.43000	19.43
suture-ophthalmic.....	1	5.00000	5.00
suture-vicryl 9-0.....	1	11.43000	11.43
syringe-10cc.....	10	0.10000	1.00

EXHIBIT 1-2 (CONT.)

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
syringe-3cc.....	3	0.10000	0.30
syringe-bulb.....	1	2.50000	2.50
syringe-TB.....	2	0.40000	0.80
tape-1" paper.....	2 roll	0.71000	1.42
thermometer probe cover.....	2	0.02000	0.04
tubing-BSS administration.....	1 roll	5.43000	5.43
tubing-IV.....	1	5.14000	5.14
tubing-oxygen.....	1	0.61000	0.61
tubing-suction.....	1	2.17000	2.17
Weck Cel spear sponges.....	20	0.86000	17.20

Total Disposable Supplies: 404.11

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
blood pressure cuff.....	1	187.00000	5000	0.04
eye instrument set.....	1	3304.00000	2000	1.65
forceps-cautery.....	2	218.90000	1000	0.44
goggles.....	1 pair	5.00000	100	0.05
hemostats.....	2	3.90000	15	0.52
phaco count.....	1	50.00000	100	0.50
phaco handpiece.....	1	50.00000	100	0.50
phaco tip.....	1	30.00000	100	0.30
stethoscope.....	2	44.50000	3000	0.03
temperature monitor-electronic.....	1	400.00000	3000	0.13
wrist rest.....	1	735.00000	1000	0.74

Total Reusable Supplies: 4.89

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
cautery machine.....	1	4000	5000	0.800000	0.80
microscope.....	1	7375	5000	1.475000	1.48
surgical stretcher.....	1	5967	5000	1.193400	1.19
video system.....	1	20830	3000	6.943333	6.94

Total Movable Equipment: 10.41

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Acetazolamide/Diamox.....	1.00	21.43000	21.43
BSS (500cc)/.....	500.00 cc	0.01540	7.70
H2O irrigation solution steril/.....	1500.00 ml	0.00038	0.57
Normal saline/.....	1000.00 ml	0.00114	1.14
Povidone iodine/Betadine.....	1.00	0.62000	0.62

EXHIBIT 1-2 (CONT.)

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Total Pharmaceuticals: 31.46

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Bupivacaine 0.75%/Marcaine 0.75%.....	8.00 cc	0.15000	1.20
Epinephrine/Adrenalin 1:1000.....	1.00 cc	1.17000	1.17
Fentanyl/Sublimaze.....	2.00 cc	2.29000	4.58
Hyaluronidase/Wydase.....	1.00 cc	4.86000	4.86
Methahexital/Brevital.....	7.00 cc	0.25000	1.75
Midazolam/Versed.....	2.00 mg	1.42200	2.84
Propofol/Diprivan.....	300.00 mg	0.04390	13.17
Sulfacetamide 10%/Sodium Sulamyd ointment.....	1.00 tube	4.50000	4.50

Total Anesthetics: 34.07

<u>Total Direct Cost:</u>	575.20	└ Indirect Labor Cost: 19.91 └ Indirect Equipment Cost: 38.00 └ Overhead: 201.10
<u>Total Indirect Cost:</u>	259.01	
<u>Total Cost of Procedure:</u>	834.21	

2. METHODOLOGICAL APPROACH

2. METHODOLOGICAL APPROACH

2.1 INTRODUCTION

The primary purpose of this study was to test the resource costing methodology. Creation of a database that can be used for this purpose implies a need for understanding how costs are defined, how data are collected and how the database is designed. Furthermore, although resource costing methods have been used previously, the methodology has not been fully described. For these reasons, a comprehensive description of this study's methods has been prepared and is presented in this chapter.

The chapter includes a discussion of the research questions that were investigated. The general models used to describe each health care activity are presented and discussed. Special attention is devoted to the definitions of cost components included in the analysis. Definitions are especially important since, in some instances, definitions used in the study differ from those used traditionally. The process for selecting procedures and visits for study is discussed and the sample design is presented. These sections are supplemented by Appendix A, which is a list of all procedures and visits studied, identified by their CPT-4 or ICD9-CM code and Appendix B, which is a list of all providers that participated in the study. The chapter also includes discussions of the data collection and analysis approaches used.

2.2 RESEARCH QUESTIONS

The research questions that have been addressed in the study are listed below.

1. What procedures/visit types will be studied?
 - 1.1 What are the highest volume procedures/visit types across the settings studied?
 - 1.2 What procedures/visit types are required for pricing categories of alternative outpatient patient classification systems (APGs, PACs/PAS, ASC payment categories)?
 - 1.3 What procedures/visit types account for the largest portion of Medicare payments?
2. For each procedure/visit type selected, what resources are required?
 - 2.1 What direct resources are required?
 - 2.2 What indirect resources are required?
 - 2.3 How do resource requirements vary by setting?
 - 2.4 How do resource requirements vary when two or more procedures occur during the same visit? Do these requirements vary by setting?

3. What are the unit costs of direct resources?
 - 3.1 How are direct resources/costs defined? How does the definition compare to other definitions?
 - 3.2 How do direct costs/unit vary by setting?
 - 3.3 How do direct costs/unit vary when two or more procedures occur during the same visit? Does this vary by setting?
 - 3.4 What is the effect of variations in volume on direct cost/unit? How does this effect vary by setting? What volume assumptions are most appropriate for pricing direct resources?
4. What are the costs of indirect resources?
 - 4.1 How are indirect resources/costs defined? How does the definition compare to other definitions?
 - 4.2 What volume assumptions are appropriate for calculations of indirect costs/unit? What is the effect of alternative assumptions on per unit cost? How does this effect vary by setting?
 - 4.3 How do per unit indirect costs vary by setting?
 - 4.4 How do per unit indirect costs vary when two or more procedures occur during the same visit? Does this vary by setting?
5. What are the total resource costs of each procedure/visit in each setting?
6. What are the marginal costs of performing a procedure when two or more procedures occur during the same visit?
 - 6.1 What multiple procedure combinations should be studied?
 - 6.2 Which procedure is the principal procedure? Which are the marginal procedures?
 - 6.3 How do marginal costs of multiple procedures vary by setting?
7. What factors cause variations in cost across settings?
 - 7.1 What factors cause variations in direct costs? What is the extent of each factor's effect?
 - 7.2 What factors cause variations in indirect costs? What is the extent of each factor's effect?
 - 7.3 To what extent are variations caused by data inconsistencies?

8. How do procedure/visit type-specific resource costs compare to other measures of costs?
 - 8.1 How do procedure/visit type-specific resource costs measured for hospital OPDs compare to hospital charges for the same procedure/visit type?
 - 8.2 How do procedure-specific resource costs measured for ASCs compare to ASC charges for the same procedure?
 - 8.3 How do procedure-specific resource costs measured for hospital OPDs and ASCs compare to current Medicare ASC payment rates for the same procedure?
 - 8.4 How do procedure/visit type-specific resource costs measured for physicians' offices compare to overhead components of RBRVS payment rates? How do comparisons vary for physicians' offices that are certified by HCFA for ambulatory surgery from those that are not certified?
9. How do measured resource costs compare to reported costs in each setting?
 - 9.1 How do per visit resource costs measured for hospital OPDs compare to per visit costs calculated using Medicare Cost Report data? How do costs compare for ambulatory surgery, clinics and emergency departments?
 - 9.2 How do resource costs measured for ASCs compare to aggregate and per visit costs calculated using HCFA ASC survey data (assuming a current survey is completed)?
 - 9.3 How do resource costs measured for physicians' offices compare to costs calculated on an aggregate and per visit basis from the National Ambulatory Medical Care Survey (NAMCS), the AMA survey and other sources of cost data?

The purposes of most of these questions is straightforward. The selection of procedures and visits for study has a substantial impact on the utility of the data included in the database. High volume Medicare procedures are of greatest interest if the study's data are to have value in supporting development of a Medicare Outpatient Prospective Payment System. This set of research questions is answered in this chapter.

Questions two, three, four and five are presented to clearly identify the process of accumulating aggregate resource costs. To answer question two, data on the resources required to complete each procedure or visit must be gathered. Question three requires identification of the unit costs of direct resources and question four requires the identification of the costs of indirect resources as well as the data that will be used to allocate indirect costs. Question five refers to the process of combining direct and indirect costs to arrive at total costs.

Questions six through nine are based on analyses of the data collected in questions two through five. In addressing question six, it is necessary to define marginal cost and identify how

it can be calculated as calculations need to be completed. A full study of marginal cost was not possible in this study. Since, however, costs were identified in substantial detail and direct and indirect costs were calculated separately, it was possible to calculate costs for a defined set of combined procedures. The goal of the marginal costing analysis was to identify costs incurred when more than one procedure is performed during a visit. This goal was attained for a small set of high volume combinations of interest to HCFA.

Question seven is a key policy question. Medicare payment systems for ambulatory surgery centers and hospital outpatient departments differ although they perform the same procedures. For some time, it has been assumed that ASCs are more efficient than OPDs and, in addition, Medicare, Medicaid and private sector payments to OPDs have been higher for OPDs than for ASCs. In other resource costing studies, OPDs were found to have lower costs,¹ although the findings were based on a small sample of procedures and facilities. In this study, data for a larger sample of facilities and for a much larger number of procedures are presented. The statistical significance of these findings are discussed later in this chapter. Comparisons between ASCs, OPDs and physician offices are also discussed in this chapter, but fewer instances of comparable services were found to be conducted in physician offices, which limited this portion of the analysis.

Question eight is investigated to assist in understanding the accuracy of resource costing and to provide a perspective for the other measures to which comparisons are made. It is useful to understand the relationship between charges and costs for specific services. These data are not available for ASCs and physician offices and are only available on an aggregate basis for hospitals. Comparisons to payment rates provide insights into the accuracy of payment rates, especially when they have been developed in the absence of cost data.

Question nine is only partially answered in the study. Comparisons are made to Medicare Cost Report and NAMCS data, but the HCFA ASC survey data were not available for review. Comparison to Medicare cost report data is useful because researchers are currently using Medicare Cost Reports to determine costs of procedures. Comparisons to NAMCS are especially useful for medical visits since time estimates for visits gathered in this study were found to vary substantially across sites. Analysis of the large database provided by NAMCS allows study data to be tested.

2.3 GENERAL MODELS OF OUTPATIENT CARE

Although several research questions have been investigated that focus on comparative data, the primary activity in this project was the calculation of resource costs for a range of outpatient services. For this reason, general models of outpatient resource costs need to be established. The model defines the components of resource costs that were investigated and describes calculation methods.

¹ See, for example, Miller, H., Balicki, B. et al, Replication of 1982 Study of Outpatient Costs in 25 Hospitals, Columbia, MD, Center for Health Policy Studies, 1990.

Different models were developed for each type of outpatient service because each service has its unique combination of resources. The four models that were developed are:

- Ambulatory surgery resource costs,
- Radiology resource costs,
- Pathology resource costs, and
- Medical service resource costs.

All four of the general models disaggregate total cost into direct and indirect costs. Since indirect cost may vary in amount, but not in content or concept, it needs to be discussed only once. (This discussion is included in the presentation of the ambulatory surgery resource cost model.) Direct costs are described independently for each model. Complete definitions are presented in the next section. It is important to understand that determinations of which costs are direct and indirect are specific to this study and may not match determinations of other studies or analyses. Our goal in determining whether a cost is direct or indirect is not to isolate those costs that vary by volume, which is the more common definition, but to identify those costs which are related specifically to the activities required for the completion of a procedure or visit.

The units for which resource costs are calculated vary dependent on type of service. For ambulatory surgery, procedures plus additional services that are bundled with procedures are the units for which costs are measured. The APG bundling algorithm was used to identify services included in each unit for ambulatory surgery, radiology, pathology and medical services. In radiology and pathology, procedures are the units used for cost measurement. For medical services, the visit is the unit for which costs are measured. In all instances, procedures are defined by their CPT-4 code and medical visits are defined by ICD9-CM codes.

The models that are presented in this chapter do not distinguish among patients with different characteristics. Most importantly, since all patients are included, the approach assumes that there is no difference in resource use based on patient age. This assumption is tied to the understanding that ambulatory procedures and visits are less complex than inpatient services.

2.3.1 Ambulatory Surgery General Model

Resource costs for ambulatory surgery procedures consist of direct and indirect costs. These costs are identified in the model that is expressed quantitatively below. This model was presented in Chapter 1 to provide an example of the composition of a general model used in resource costing. Each component of the model is discussed independently in the paragraphs that follow.

$$\begin{array}{lll}
 RC_a & = & DRC_a + IDRC_a \\
 \text{Where: } RC_a & = & \text{Resource Costs of Ambulatory Surgery} \\
 DRC_a & = & \text{Direct Resource Costs of Ambulatory Surgery} \\
 IDRC_a & = & \text{Indirect Resource Costs of Ambulatory Surgery} \\
 \\
 DRC_a & = & L_a + S_a + D_a + P_a + SE_a \\
 \text{Where: } L_a & = & \text{Ambulatory Surgery Labor Costs}
 \end{array}$$

S_a	=	Ambulatory Surgery Supply Costs
D_a	=	Ambulatory Surgery Drug Costs
P_a	=	Ambulatory Surgery Pathology Costs
SE_a	=	Ambulatory Surgery Special Equipment Costs

L_a	=	$N_a + t_a + o_a$
Where: N_a	=	Nursing Costs
t_a	=	Technician Costs
o_a	=	Other Personnel Costs

S_a	=	$s_a + i_a$
Where: s_a	=	Surgical Supply Costs
i_a	=	Surgical Instrument Costs

D_a	=	$p_a + a_a$
Where: p_a	=	Pharmaceutical Costs
a_a	=	Anesthesia Costs

$IDRC_a$	=	$IA_a + M_a + OP_a + H_a + E_a + SP_a$
Where: IA_a	=	Ambulatory Surgery Indirect Administration Costs
M_a	=	Ambulatory Surgery Maintenance Costs
OP_a	=	Ambulatory Surgery Plant Operation Costs
H_a	=	Ambulatory Surgery Housekeeping Costs
E_a	=	Ambulatory Surgery Non Procedure-Specific Equipment Costs
SP_a	=	Ambulatory Surgery Space Costs

Direct resources used in ambulatory surgery are labor, supplies (including instruments), drugs (including anesthesia), pathology services and special equipment. Labor consists of nursing, technicians (if any) and other staff. Because only facility costs are being measured, physician costs are not included. Labor is defined as salary plus fringe benefits. Nursing labor is separately identified at four stages in the surgery process:

- Presurgical preparation
- Surgery
- Operating room turnaround period
- Recovery.

In nearly all instances, two nurses (a scrub nurse and a circulating nurse) work in the operating room during procedures. Their cost depends directly on the amount of time required to complete a procedure. Data on operating room time, therefore, when applied to hourly costs for nursing time, is used to measure the costs of nursing labor during surgery. Data on operating room time was gathered both normatively and from operating room logs. When each procedure is concluded, each operating room must be turned around (cleaned and prepared) for the next procedure. This activity normally requires fifteen minutes for one nurse. In this study,

turnaround time was measured to determine whether it varies by procedure. Variations were not noted and a common measure of cost for this activity was applied to all procedures.

Recovery room nursing costs are measured by multiplying the average cost per minute of recovery room nurses by the length of time that a patient stays in the recovery room. It should be understood that most facilities in which ambulatory surgery is performed have at least a two-step recovery process and costs may vary in each part of the process. In this study, procedure-specific measures of recovery room time were provided by nurses in the facilities that were studied.

Variations in the distribution of nursing time in different facilities were identified and included in calculations. Such variations occurred because providers staff their surgical suites differently. Some providers use only registered nurses while others use technicians and licensed practical nurses. The mix of staff used by each provider was accepted and included in calculations of the costs of that provider. No effort was made to standardize approaches for the use of nurses. Differences in salary levels and fringe benefits also cause variations in nursing costs across facilities. In addition to nurses, many facilities use O.R. technicians to assist in activities. In facilities where they are found, their activities and costs were added to nursing labor costs. Similarly, there are other staff in facilities whose services are related directly to specific procedures. Their costs were also added to arrive at total direct labor costs.

It must be understood that only facility costs were measured in this study. By definition, facility costs of ambulatory surgery do not include costs of physician services, including both surgeons and anesthesiologists. Costs of anesthesia, as discussed below, are included in the costs that are measured.

Costs of all supplies that are used for each procedure are included in the resource costing model. Supplies include disposable items required for surgery as well as reusable supplies. Supplies required for each procedure were identified by operating room nurses at each facility and prices for each supply item were gathered at each facility in the study. While the inclusion and measurement of disposable supplies is straightforward, difficulty is encountered when the costs of reusable supplies are considered. Many facilities use disposable instruments although reusable instruments are also frequently encountered. Both disposable and reusable supply costs were calculated, based on their actual use in the facilities studied.

The resource cost model for ambulatory surgery also includes the costs of drugs used in the surgical process. Anesthesia, which was costed separately, is included in the total cost of drugs. Efforts were made to not only identify the cost of anesthesia, but data on type and modality of administration were also gathered. These data were used to explain differences in operating room and recovery time across facilities to determine whether type and modality of anesthesia explain differences in time for the same procedure.

Pathology costs are incurred for many procedures. If a surgical procedure requires the submission and analysis of a specimen, the costs of such analysis can be included in the costs of the procedure to which it is related. In many instances, pathology requirements need to be met before surgery is performed. In the APG structure, some routine pre-surgery (or: the day of surgery) lab tests may be bundled with the procedure. The data collection approach described in

this research design allowed these costs to either be included in the costs of procedures or calculated separately. Some facilities that perform ambulatory surgery complete pre- and post-operative laboratory work themselves, while others have the work done by a different service provider. The approach used in this study allows for the separate calculation of these costs which means that the location at which the service is provided does not affect the identification of costs. In the study, pathology costs are calculated separately and are not included in the costs of related surgical procedures.

As noted, some procedures require the use of special equipment. When such equipment is required, it is considered as a direct cost and included in this portion of the model. Examples of special equipment that were costed directly are automated tourniquets for podiatric surgery and laser equipment for eye procedures. When equipment was found to be used for more than one, but for less than five procedures, its cost was allocated among the procedures for which it was used.

Although indirect costs are described in this section, the same calculations of indirect cost apply to all four general models. Once indirect costs are calculated for a facility, they can be applied to any service. Of course, the rate at which they are applied varies, dependent on the requirements of the service. The indirect costs of ambulatory surgery include:

- Indirect administration (including medical records)
- Maintenance
- Operation of plant
- Housekeeping (including laundry)
- Equipment that is not procedure-specific
- Space.

Indirect administration includes the costs of managing, billing, data processing and medical records. In this study, all costs identified in the stepdown allocation of overhead in a hospital's Medicare Cost Report were included in the resource cost measures developed. Types of costs vary among ASCs and hospitals. Costs of senior hospital administrative staff were also allocated to ambulatory surgery as part of the model. When surgery is performed in physician offices, comparatively little indirect administrative cost is encountered.

Costs relating to maintenance, operation of plant and housekeeping are straightforward and require little explanation. All repairs, including maintenance contracts, were included in a single maintenance category.

Cost of Operating Room equipment that is not procedure-specific was allocated to all procedures by calculating a per minute cost for the equipment and multiplying that cost by the number of minutes that the procedure takes. Equipment was valued at replacement cost and minutes of useful life were based on industry standards. Cost of other non-procedure-specific equipment were allocated based on the number of procedures performed.

Cost of space was determined by calculating a cost per square foot for buildings in which services are housed. Historical cost of buildings for each site studied were not used in these

measures. Since historical cost varies substantially across facilities, depending on when the facility was constructed, costs based on historical cost need to be adjusted for price level changes which would require securing and using each facility's depreciation schedule. Such an approach is prohibitively complex, especially for hospitals. Instead, replacement cost was used. Replacement cost recognizes differences in size, type and location of facilities, and treats facilities of the same type that have unusually high or low construction costs as though they were similar. Data needed for replacement cost calculations include the size and location of the facility and an estimate of the construction cost. Marshall and Swift's construction costs and related indices were used to provide these data.

It should be noted that the model does not include the direct costs of medical education. Ambulatory surgery is performed most frequently in non-teaching settings. Other ambulatory services, especially clinic and emergency services, are more likely to have direct medical education costs associated with them. Although we collected data on direct medical education, these costs were not included in calculations of resource costs in any settings. Their inclusion would have made comparisons of costs across procedures and visits less meaningful. Indirect costs of medical education are inherently included in the model as part of the costs that are related to operating room time for teaching hospitals included in the study. Analyses of costs in these hospitals revealed that they have little impact in the settings studied.

2.3.2 Radiology and Laboratory General Models

Although radiology and laboratory costs were calculated independently, the model used to describe them is identical. For this reason, both are discussed in this section. As in the case of ambulatory surgery, radiology and laboratory (not including pathology procedures that are directly related to an ambulatory surgery procedure) procedure resource costs consist of direct and indirect costs. As previously discussed, indirect costs do not vary in concept among types of services and, therefore, they are not discussed again in this section. Discussions are limited to the direct costs of radiology and laboratory procedures.

The model used for radiology and laboratory procedure resource costs is expressed quantitatively below and discussed in the paragraphs that follow.

$$\begin{aligned} RC_r &= DRC_r + IDRC_r \\ \text{Where: } RC_r &= \text{Resource Costs of Radiology} \\ DRC_r &= \text{Direct Resource Costs of Radiology} \\ IDRC_r &= \text{Indirect Resource Costs of Radiology} \end{aligned}$$

$$\begin{aligned} DRC_r &= L_r + S_r + D_r + SE_r \\ \text{Where: } L_r &= \text{Radiology Labor Costs} \\ S_r &= \text{Radiology Supply Costs} \\ D_r &= \text{Radiology Drug Costs} \\ SE_r &= \text{Radiology Special Equipment Costs} \end{aligned}$$

$$\begin{aligned} IDRC_r &= IA_r + M_r + OP_r + H_r + E_r + SP_r \\ \text{Where: } IA_r &= \text{Radiology Indirect Administration Costs} \end{aligned}$$

M_r	=	Radiology Maintenance Costs
OP_r	=	Radiology Plan Operation Costs
H_r	=	Radiology Housekeeping Costs
E_r	=	Radiology Non-Procedure-Specific Equipment Costs
SP_r	=	Radiology Space Costs

* * *

RC_i	=	$DRC_i + IDRC_i$
Where: RC_i	=	Laboratory Resource Costs
DRC_i	=	Laboratory Direct Costs
$IDRC_i$	=	Laboratory Indirect Costs

DRC_i	=	$L_i + S_i + D_i + SE_i$
Where: L_i	=	Laboratory Labor Costs
S_i	=	Laboratory Supply Costs
D_i	=	Laboratory Drug Costs
SE_i	=	Laboratory Special Equipment Costs

$IDRC_i$	=	$IA_i + M_i + OP_i + H_i + E_i + SP_i$
Where: IA_i	=	Laboratory Indirect Administrative Costs
M_i	=	Laboratory Maintenance Costs
OP_i	=	Laboratory Plant Operation Costs
H_i	=	Laboratory Housekeeping Costs
E_i	=	Laboratory Non-Procedure-Specific Equipment Costs
SP_i	=	Laboratory Space Costs

The direct resources required for radiology and laboratory services include labor, supplies, drugs and special equipment. Labor is applied to radiology and laboratory procedures at three different times. First, technician time is expended when a laboratory sample is obtained from a patient or when a patient is prepared for a radiological procedure. Second, time is expended when the procedure is completed, i.e., when the laboratory test is completed or when the radiologic film is made. Third, time is expended when the test or film is interpreted by a medical professional. Communication costs also are incurred at this time. As in the case of ambulatory surgery, this study is concerned only with costs attributed to facilities and therefore does not include physician costs. Most direct labor is provided during the first two activities and the resource costing model focuses on them. Unit costs of labor applied in radiology and laboratory procedures were identified at each facility in the study. Amounts of labor applied were determined by staff at participating facilities.

Supplies and drugs vary by procedure. Identification of these items was also the responsibility of staff at each facility and unit costs of each supply and drug were gathered at each facility.

As in the case of ambulatory surgery, some radiology and laboratory equipment is devoted to specific procedures. In such instances, these items of equipment were considered to be direct costs of the procedure to which they are related. Unit costs (costs per minute of use) were calculated by dividing replacement cost by useful life, as previously discussed. Costs per minute were applied to the number of minutes used for each relevant procedure. Equipment that is used for a large number of procedures was treated as an indirect cost.

2.3.3 Medical Services General Model

Costs of clinic, emergency and medical physician office services are included in this model. As in the case of radiology and laboratory, only direct costs are discussed at length, since indirect costs were measured in the same way described for ambulatory surgery. The resource costing model for medical services is expressed quantitatively below and discussed in the paragraphs that follow.

RC_m	=	$DRC_m + IDRC_m$
Where: RC_m	=	Resource Costs of Medical Visits
DRC_m	=	Direct Costs of Medical Visits
$IDRC_m$	=	Indirect Costs of Medical Visits
DRC_m	=	$L_m + S_m + D_m + SE_m$
Where: L_m	=	Medical Visit Labor Costs
S_m	=	Medical Visit Supply Costs
D_m	=	Medical Visit Drug Costs
SE_m	=	Medical Visit Special Equipment Costs
$IDRC_m$	=	$IA_m + M_m + OP_m + H_m + E_m + SP_m$
Where: IA_m	=	Medical Visits Indirect Administration Costs
M_m	=	Medical Visits Maintenance Costs
OP_m	=	Medical Visits Plan Operations Costs
H_m	=	Medical Visits Housekeeping Costs
E_m	=	Medical Visits Non-Procedure-Specific Equipment
SP_m	=	Medical Visits Space Costs

It should be understood that it is more difficult to measure the costs of medical visits on a visit-specific basis than it is to measure the costs of ambulatory surgery or diagnostic testing on a procedure-specific basis. Medical visits vary in length because of practice style as much as they do because of any other factor. For this reason, this study focused on collection of data for all medical visits within a clinic setting. During the data collection phase of the study, information on visits was collected for groups of visits rather than for individual visits identified by diagnostic codes. In the analysis, cost inputs for all medical visits were calculated and reasons for variation among clinics were investigated. Since time for medical visits varies for different diagnoses and it is impractical when using this data collection approach to collect sufficient time data, alternative sources, such as the National Ambulatory Medical Care Survey (NAMCS), were used to evaluate the time related finding of this study. In this study, time in examination rooms was collected. However, these alternative sources, used to validate the collected data, apply different time definitions. For example, in this study, time spent by the patient during the visit is

most relevant, but NAMCS measures only the time that the physician spends with the patient. To assure comparability to other data sources, additional visit time definitions, such as physician or total staff time, were also collected and examined. Examination of visits on a clinic basis allows the cost of special equipment or supplies that relate to specific visits, e.g., ophthalmology equipment, to be matched accurately to the visits for which they are used.

As in other cases, the direct resources required for the delivery of medical services are labor, supplies, drugs and special equipment. Within this study, labor includes only nurse and aide time that is related directly to the provision of care during the visit. Time spent by nursing staff with each patient was measured and non-contact time that is related to the visit was added before multiplying total time by unit cost to arrive at direct labor cost. Because of the expected variability in time spent with patients, and the possibility that times for all relevant diagnoses were available, additional time estimates for visits not adequately represented in the empirical data were gathered. Clinical experts and facility staff were used to fill these gaps. Time estimates were expanded, using additional time data sources, to develop time estimates and subsequently cost estimates, for each medical visit studied.

Supplies, drugs and special equipment for medical services were addressed in the same way that was described for radiology and pathology. In most instances, these items are applied less frequently, during medical visits than during surgical procedures, although there is substantial use of drugs and supplies in emergency rooms.

All other costs associated with the operation of clinics were considered indirect and were allocated based on examination room time or an equivalent measure.

2.4 DEFINITIONS OF COST COMPONENTS

The components of resource costs are discussed in this section and the methods used to identify direct and indirect costs in the study are discussed in detail. A description of the major components of indirect costs is also included. It should be understood that throughout this study, data were collected for participating facilities most recent fiscal year. For most facilities, the most recent fiscal year ended in 1992. In a few instances, data for fiscal years ended in 1991 were the most recent data that were available. In these instances, these data were used although they were inflated by the DRI hospital marketbasket index to make them comparable to 1992 data.

In previous discussions, an important distinction was made between *direct* and *indirect* resource costs of outpatient medical services. Direct costs have been broadly defined as including any costs that can be traced to a specific procedure or visit. Direct costs include all expenses that are related to "hands on" patient care and those that are directly assignable to a given type of surgical case or medical visit. There is no intervening basis for allocating direct costs because they can be directly traced to the delivery of specific patient services. Direct costs for outpatient procedures include direct labor time, medical supplies, special equipment, medication, anesthesia, and special ancillary testing.

The identification of direct costs in this study can be summarized as a three-stage process. The first stage was to measure the type and relative amounts of direct resources that are most commonly used for each type of outpatient procedure. CHPS data collectors assigned procedure resource consumption profiles to the clinicians working at each facility in order to gather the relevant resource information on a prospective basis. Next, the unit cost of each type of resource was compiled from purchasing and payroll records. Efforts were made to track both the standard unit of purchase and the quantity/dosage of each item in question. Finally, all resource volumes were multiplied by their associated unit costs. The resulting product of all resources and their unit costs yielded a total direct cost for each procedure.

This method of direct resource costing has been shown to be far more accurate than calculating average procedure costs with traditional accounting data because resource profiles relate specifically to each procedure rather than to broad groups of procedures. In addition, the flexibility of this type of cost accounting lends itself to close examination of the smaller components of direct cost. Data were compiled for each provider while a more generalized cost standard was established for the direct costs of each procedure or visit.

Indirect costs serve as the other key part of the costing framework. Unlike direct costs, indirect costs are those which do not directly contribute to the production of an individual service. They cannot be measured or evaluated on a procedure-by-procedure basis. Instead, indirect costs are incurred to support all patient care activities. The cost for a surgery table at an ambulatory surgery center is an example of an indirect cost. Although the equipment could be considered "direct" in the sense that it is used during the medical treatment of patients, its use is too broadly-based to be tied to any one procedure or patient visit. The purchase costs and depreciation of these and other types of non-specialized equipment are included as part of the "indirect equipment costs" category. Another, more evident, example of non-procedural indirect costs is the rent or mortgage expenses for a given facility.

Measurement of all indirect costs required data collectors to use different research techniques than those inherent in resource profiles used to determine direct costs. To begin with, a time period had to be selected as a basis for gathering financial information on a retrospective (i.e., historical) basis. As noted, the latest fiscal year (1991-1992) was chosen because it reflects current operations as closely as possible. Facilities also maintain records in this manner for financial reporting, and year-end reports are generally available to the financial administrators who were interviewed in the study.

Another characteristic of indirect costs, especially those that make up the largest component, which has been designated overhead, is that they must be allocated to each outpatient department and ultimately to procedures. The allocation of indirect costs is a necessary step in any cost accounting system. Methods of indirect cost allocation were carefully considered and the most significant indicators of outpatient activity or "cost drivers" known to exist in each of the patient care areas were selected. These allocation statistics include square footage, hours of operation, volume of inpatient and outpatient procedures (if both types are offered), and average time per inpatient and outpatient procedure. Most indirect costs were allocated using procedure-specific direct contact time. Contact time is the preferred method for allocating indirect costs in

cases where direct labor accounts for a significant portion of per visit costs. Specific methods for allocating each indirect cost component are discussed in subsequent sections of this chapter.

Still another difference between the two cost categories is that indirect costs span a wider range of activity than direct costs. Direct costs apply only to procedures themselves at all provider locations while at hospitals, indirect costs can apply to either a single department (e.g., office supplies) or to the whole facility (e.g., centralized administration expenses). Thus, during the interview process at hospitals, data collectors were required to gather needed financial information from both Medicare Cost Reports and department expense reports. It was important to be certain that the indirect cost-finding process would remain comprehensive yet avoid any possible "double-counting" of costs reported in both sources of information.

2.4.1 Components of Direct Cost

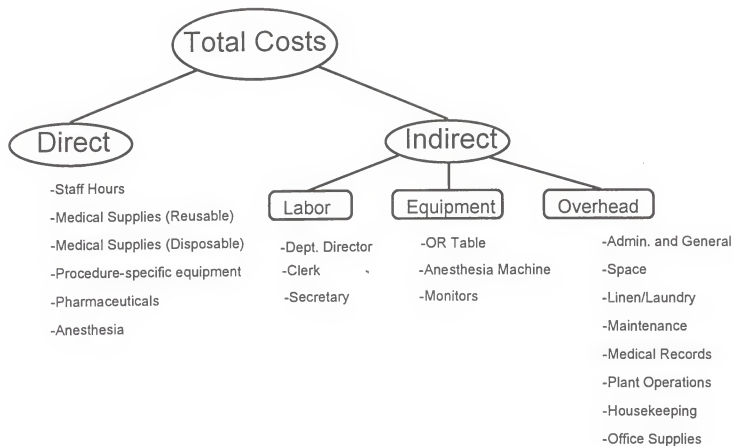
As indicated in the discussions of general models, direct cost components include labor, disposable supplies, reusable supplies, specialized equipment, anesthesia, and pharmaceutical supplies (medications). These direct costs are presented in Exhibit 2-1.

Labor is one of the most significant elements of the direct cost of care. Prior resource costing studies have shown that labor is the single largest component of cost for medical services. Department supervisors carefully estimated the amount of time spent by clinicians throughout all stages of the patient care process. Surgical cases were evaluated in terms of pre-operative staff time prior to the day of surgery, pre-operative time on the day of surgery, portal-to-portal surgical time, post-operative care, and stage-two recovery room time (where applicable). Time was segregated by staff position and combined with corresponding salary and benefits information establishing a total labor cost per procedure. Physician and anesthesiologist time were included in the initial collection of labor data, although these staff were ultimately excluded from the evaluation of labor resources because they bill separately for services they provide.

In this study, less variation in regional wage levels was found than was expected. Nevertheless, in order to eliminate possible effects of regional wage variations, HCFA's hospital wage index was used to adjust labor costs. As discussed in Chapter 3, other costs were not adjusted for geographic differences. No differences based on geographic location were noted for equipment, supplies or pharmaceuticals. The increasing use of joint purchasing contracts that allow several providers to purchase items at the same price appear to have eliminated regional differences in most non-labor cost categories. Differences in space costs (an indirect cost discussed below) were found to vary by location, but variations were linked more to aspects of local markets rather than geographic location. The methods used to identify space costs incorporated local market variations.

The next category of direct resource use is reusable medical supplies. Reusable medical supplies include any supplies that can be used more than once during the care or treatment of patients. As can be found in the resource patterns for most procedures, reusable supplies include many standard items in an instrument tray or basin set. They may also include individual items such as a pair of goggles or a medicine glass. Reusable supplies are costed in much the same

Exhibit 2-1



way as medical equipment. After identifying the standard set of supplies for a given procedure for a provider, the useful life of each item and its replacement cost are converted into a per-case cost.

The distinction between whether an item is classified as a supply or whether it is a piece of equipment can be ambiguous. However, the treatment of these two direct costs is so similar in the final cost analysis that it was more important to ensure that clinicians included the item in at least one of the two groups than to impose a rigid distinction in their classification. In general, equipment includes items for which the purchase price is greater than \$500.

Disposable medical supplies include any medical supply that is used only once during an episode of care and then thrown away or given to the patient. Because many smaller and less expensive items are included in this category, it was possible to substitute standard costs for unit costs when such costs were not available from a provider. Examples of disposable supplies are crutches, needles, head covers for surgeons, sponges, specimen containers, and sutures. Such supplies may be consumed by either the patient or the medical provider during a procedure. In comparing surgical and non-surgical outpatient cases, a substantially greater number of disposable supplies were found to be consumed during a surgical case.

Specialized equipment expenses are the direct costs associated with use of equipment specific to a particular type of outpatient procedure. They do not include costs for commonly used equipment such as pulse oximeters or blood pressure monitors. The specialized equipment for arthroscopic surgery consists of an arthroscopic pump, an electro-cautery machine, and other unique items used for arthroscopy. Costs are determined in the same manner as they were for reusable supplies. Equipment is identified for the procedure in the resource profiles, its replacement cost is determined, and a common amount of expense required to use the equipment during a single visit is established for all providers. This amount is based on the expected useful life of a piece of equipment regardless of how frequently an individual provider uses it.

This approach for identifying equipment cost is not the only one that can be used. For some pieces of equipment that are especially important in terms of their contribution to total procedure cost, cost may vary because different levels of volume affect cost. For example, equipment costs are a substantial portion of total costs for some radiological procedures, e.g., MRI and CAT scans. Providers with high procedure volumes may obtain greater usage from their equipment or may see the equipment deteriorate quicker. Sensitivity tests were conducted for a small number of procedures in order to determine the effect of volume on equipment and procedure cost.

Pharmaceuticals include all standard non-anesthetic medications used during the course of a procedure. Not only do they include any medication dispensed directly to the patient, but they also include any "extra" pharmaceuticals which must be used. For example, a patient may be prescribed an IV solution for outpatient surgery. Even if only one fourth of the bag is administered and the remainder is thrown away, the entire cost of the IV bag is recorded as a direct pharmacy resource cost.

Anesthesia is the last category of direct resource costs. It applies only to surgical cases. Anesthesia use was first evaluated in terms of the pattern of anesthesia that is most common for a surgical procedure -- general, IV sedation, block, local, epidural, spinal, and other. "Other" usually includes some form of monitored anesthesia care (MAC). The second part of measuring anesthesia costs is the identification of the costs of all anesthetics used. For example, general anesthetic cases often include either Sodium Pentathol or Propofol/Diprivan. Ventilator gas costs were calculated by measuring the costs for the total number of liters where available or by taking the flow rate and the operating room time and establishing an estimate of the total number of liters used. Generic and brand names for both pharmaceuticals and anesthetics were included in the collection of direct resource costs.

2.4.2 Components of Indirect Cost

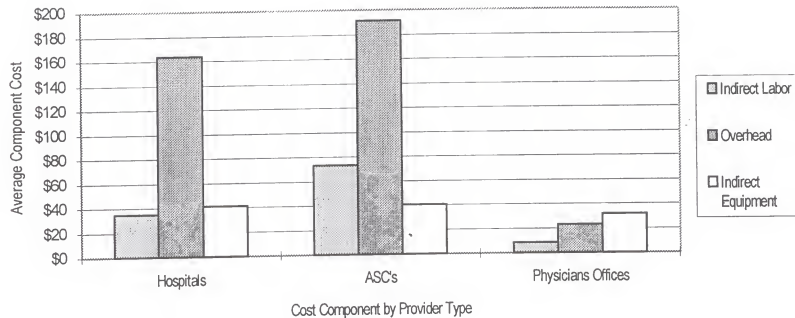
Indirect costs have been separated into three categories: indirect labor, indirect equipment, and overhead. The relative magnitude of these components by provider type is presented in Exhibit 2-2A and each category of cost is discussed below. The overall distribution of total indirect costs is presented in Exhibit 2-2B.

Indirect labor is a group of indirect costs that were measured for each department, i.e., cost center, participating in the study. It consists of all salary and wage expenses for provider staff who spend a significant portion of their work time performing indirect activities (non-patient-care, non-procedure related functions) within a given patient area. All personnel expenses related to environmental, clerical, or managerial support are included in indirect labor. To measure indirect labor costs, department supervisors were asked to identify all of the different types and number of staff considered to be indirect. When a staff member was reported to be dedicating all of their time to indirect tasks, one full time equivalent (FTE) was counted toward an indirect labor pool. For example, a full-time office clerk who provides computer support in an emergency department would be considered an FTE of indirect labor. In other cases where a significant portion of staff work time is split between indirect services and direct patient care, indirect time was translated into portions of indirect FTE's. For example, if a nurse manager at a facility was found to work half-time as caregiver and half-time as an administrator, then 0.5 FTE was counted toward indirect labor resources for "nurse managers." The sum of all indirect FTE's for each staff position was combined with salary and benefits information to yield total indirect labor cost by department.

Indirect equipment, the second major grouping of indirect costs, accounts for the cost and depreciation for major moveable equipment not found to be specifically related to a procedure. Indirect equipment, therefore, includes the standard set of equipment used for different types of medical procedures. Normative costs and use rates were used for operating room and patient examination room equipment. The norms for indirect equipment costs were modified to reflect the use of current medical technologies. The calculation that was used to derive this indirect equipment cost estimate is presented in Table 2-1. The same estimate for indirect equipment costs was used for all providers.

DISTRIBUTION OF INDIRECT COSTS PER PROCEDURE

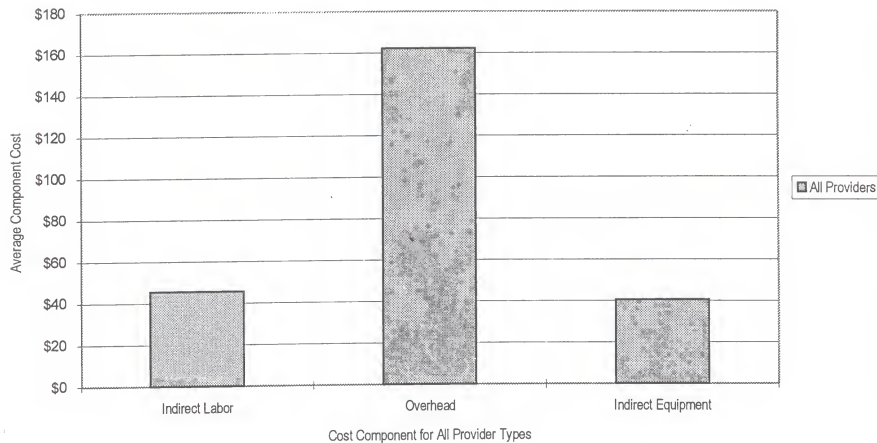
EXHIBIT 2-2A



SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

EXHIBIT 2-2B

DISTRIBUTION OF INDIRECT COSTS PER PROCEDURE, ALL PROVIDERS



SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

TABLE 2-1
INDIRECT EQUIPMENT COST CALCULATION

ESTIMATED INDIRECT EQUIPMENT COST PER O.R.	LIFETIME YEARS	LIFETIME PROCEDURES	COST PER PROCEDURE	COST PER MINUTE (45 min per procedure)
\$298,000	9	9,000	\$33.11	.74

Institutional **overhead**, the third and largest category of indirect costs, includes all other organizational expenses that are included as indirect support of patient care but which have not been classified as either indirect labor or indirect equipment. Overhead typically includes the costs that are associated with centralized business functions and provider operations. Many day-to-day resources that are shared among departments (e.g., housekeeping) make up this large indirect cost category. Certain facility-wide expenses within hospitals (e.g., dietary costs) were excluded from overhead cost calculations because they are irrelevant for outpatient services.

Overhead cost data were collected during a series of structured interviews with financial administrators at each provider's facility. The identification of overhead costs at hospitals, however, was unlike data collection for other providers in that hospital overhead was derived from Medicare cost reports. Pre-defined groups of step-down costs were first gathered for each selected department/cost-center and then supplemented with any other relevant costs from department expense reports.

In contrast, overhead expenses for surgical centers and physician practices were gathered by reviewing income statements and trial balances. These data required a greater degree of interpretation to structure overhead into a format that was compatible with hospital overhead. If a non-hospital provider operated multiple outpatient departments, data collectors worked closely with facility financial administrators to determine the most appropriate method to allocate overhead costs to each department. Some facilities maintain cost accounting systems that automatically track and allocate overhead costs. If department-specific cost information was unavailable, then data collectors used square footage and other allocation statistics to distribute overhead costs across departments.

The categories of overhead are explained in greater detail below.

Plant Operations

Plant operations reflect all necessary utility expenses, e.g., electricity, water, gas, heating, and telephone expenses that are required to maintain a provider's physical plant.

Hospitals report plant operation costs as a line item on the Medicare Cost Report. Utility costs were allocated to departments based on square footage for patient areas. Telephone expenditures were added if they were identified as separate costs in the department expense report.

Plant operation expenses for physician practices and ASCs were obtained from relevant line items listed in the facility general ledger or income statement.

Housekeeping

Housekeeping costs include all of the salary and supply costs associated with each provider's definition of housekeeping. If data collectors were able to identify specific housekeeping staff members during the course of on-site interviews, then indirect labor costs of housekeeping were subtracted from the housekeeping costs stepped-down in the Medicare cost report. In most cases, however, department directors were not familiar enough with general housekeeping activities to accurately include these staff as part of the indirect labor resource.

At some ASCs and physician offices, financial administrators reported housekeeping expenses as a purchased contract service or as included within the facility rent. When necessary, double counting was avoided by omitting housekeeping costs from the overhead analysis.

Linen/Laundry

All expenses related to linen and laundry maintenance were recorded for all providers. Costs include associated salaries, equipment costs, and contracted laundry services if purchased from an outside agency.

Medical Records

Medical records costs include all expenses related to the administration and support of medical recordkeeping. If staff could be identified for an outpatient department, then their medical record salary costs were allocated directly to the department.

For smaller, single department providers in the study, medical record expenses were often incorporated into the general and administrative category of overhead expenses.

Maintenance and Repairs

Maintenance and repairs include both departmental maintenance costs as well as facility-wide expenses. Many providers and departments in hospitals contract with outside companies and firms to provide routine maintenance of costly equipment. Within radiology, substantial expenditures were made annually for maintenance contracts and additional insurance. Maintenance costs were also incurred by providers to upgrade and maintain the general grounds.

Maintenance and repair costs were carefully examined to be certain that they included all relevant costs for each outpatient department. If departments incurred separate maintenance expenses in addition to facility-wide maintenance expenses reported in cost-reports, then all repair costs were combined for each department.

Office Supplies

Office supplies consist primarily of administrative supplies required for a given patient area. Included are pens, pencils, paper, and miscellaneous non-medical supplies. Smaller departmental expenses such as magazine subscriptions, books, and licensing dues were also included in this category.

Office supplies are not usually included in facility cost reports. For this reason, costs were obtained from departmental expense reports for hospitals and income statements or general ledgers for other providers.

Space Costs

Space costs are one of the largest overhead expenses. They are defined as the expenses that providers bear in order to work at and maintain the physical structure of their facility and any surrounding property. These costs include rent or mortgage payments, property taxes, land acquisition costs, and building insurance. In most cases, space costs excluded any costs related to utilities or maintenance and repairs. However, some providers that participated in the study had rental contracts that included housekeeping and/or maintenance services. Efforts were made to separate these costs whenever possible.

Hospitals were treated differently from ASCs and physician offices in regard to space costs. Data collectors included fixed capital expenditures allocated to a department as indicated in the Medicare Cost Report, but these costs were identified as "fixed capital" and not "space." The cost report does not include a cost center explicitly entitled "space," but the components of space costs are equivalent to fixed capital costs.

The square footage of a facility and all of its departments has a significant impact on its space costs. Therefore, space costs were tracked during the data collection process in both aggregate terms and on a square foot basis. Adjustments for size variation among facilities and departments were made by tracking space costs per square foot.

Administrative and General

Administrative and general costs are all of the large, non-departmental costs required to operate an organization. Hospitals report administrative and general costs as a category of step-down costs within the Medicare cost report. Included are marketing expenses, salaries for top executives, community contributions, costs of professional liability coverage, data processing, accounts receivables/collections, advertising, postage costs, licensing fees, refunds for overpayments, travel related expenses, professional dues, education and training, legal fees, library costs, and other general purchased services.

Once indirect costs are identified, they need to be allocated to procedures. The allocation process in this study used procedure or visit time (operating room time for ambulatory surgery) as the allocation statistic. Total minutes of operating each department studied (Ambulatory surgery, Radiology, Laboratory and Clinics) were determined and cost per minute for overhead, equipment and indirect labor was calculated. Cost per minute was multiplied by number of minutes for procedures and visits to complete the indirect cost allocation process.

2.5 PROCEDURES AND VISITS INCLUDED IN THE STUDY

Although a substantial number of procedures and visits were candidates for investigation, a comparatively small number of procedures and visits were found to account for a large portion of total outpatient service volume. Since one of the purposes of this study is to provide the paradigm for future studies that may be used to support the implementation of a Medicare outpatient prospective payment system, we used Ambulatory Patient Groups (APGs) to provide the framework for selecting the procedure/visit sample. APGs have been most frequently cited as the classification system likely to be used for the Medicare Outpatient Prospective Payment System.

Different approaches were used to select procedures and visits, depending on their type. Substantial data are available on volumes of ambulatory surgery procedures, but data sources for medical visits and radiology and pathology procedures are less adequate. In order to select ambulatory surgery procedures, APG categories were investigated and the highest volume procedures in each category were selected. The intent was to select all procedures that accounted for at least 50 percent of each APG's volume, but the varied distribution of volume within APGs did not allow such an approach to be universally applicable. Instead, volume levels in each ambulatory surgery APG category were reviewed and either those procedures that accounted for at least 50 percent of all procedures within the APG were selected or it was determined, based on volume, how many procedures within the APG were worth studying. Procedures selected for study are identified as "seed procedures."

As with surgical services, an analysis of the frequency of radiology and laboratory services was completed. The most common services were identified and selected as seed procedures. For outpatient clinics, the most common medical visits from the Products of Ambulatory Care database were identified. The study's clinical panel also recommended the inclusion of additional medical visits. These visits are listed in Appendix A, following the list of surgery, radiology and laboratory services. In addition, other common procedures that do not fall into previously identified categories are also listed in Appendix A.

2.6 SAMPLE DESIGN

In order to understand the approach used to identify the provider sample, it is necessary to address the nature of the data collected from providers. As has been discussed, data on resource use was gathered from clinical panels and observations of provider activities. These data were used to establish resource profiles for which costs were attached. Cost data were collected from

a sample of providers and were supplemented, when necessary, with data from other sources. Sample precision relates to these cost data, which vary among providers and on which the ultimate values of resource costs depend. As a result, the sampling plan focuses on unit and procedure costs and not on resource use. The plan is presented and the sample of providers that has been selected is summarized in the pages that follow.

2.6.1 Objectives of the Provider Sampling Plan

As noted, the primary study objective is to test the methodology for costing the resource utilization for outpatient procedures and visits. To achieve this objective, a sample of hospitals, ambulatory surgical centers (ASCs), and physician offices that met the following criteria were selected:

- Outpatient surgical procedures were chosen so that each procedure performed had an equal probability of selection (within the constraint of seeking only the procedure codes, as classified in the APG classification system, that had been identified for study,
- Hospitals were selected only if they had adequate ambulatory surgery volume to provide a useful representation of costs and adequate outpatient clinic volume to meet the demands of the non-surgical data collection component,
- A sample of ambulatory surgical centers (ASCs) equal in size to the hospital sample was selected, and
- A sample of physician group practices, equal in size to the hospital sample and matched on location, was selected. Only group practices were included in the sample to make it more probable that a large sample of procedure or visit data was available at each site. Further research on physician practice expenses will also require collection of solo practice data.

Within these constraints, a random sample of hospitals and ASCs was selected. Facility sample size was restricted by budgetary considerations. Since the study's sampling unit is the procedure or visit and the study's budget was limited, it was determined that facilities needed to be selected that were sufficiently representative, given a variety of characteristics that are discussed subsequently. Subsequent discussions also indicate that tests of significance are based on the procedure sample, not the facility sample. Nevertheless, the representativeness of the facility sample is important in that a lack of representativeness limits the acceptability of unit cost data gathered from facilities. The objective of selecting providers was to obtain acceptance within the study's time and cost limits.

2.6.2 Target Population

The study's target population consisted of all outpatient visits performed in the continental United States. The provider target population consisted of all hospitals, ASCs, and

physician group practices that perform outpatient services. Among hospitals, only short-stay, non-federal hospitals that had at least a minimal number of outpatient clinical visits were included in the target population. Hospitals and ASCs with fewer than 1,000 surgical procedures were not considered for this analysis; this selection criterion was made in order to facilitate the collection of suitably disaggregated data from providers currently producing at levels where they experience efficiencies of costs. (Future studies will include a statistical analysis of the hospital, ASC, and physician group populations, and the sample, a priori, will be constructed from groups with comparable population parameters.) Additionally, all ASCs less than three years old or those that were not Medicare certified were eliminated. New ASCs were not expected to have a sufficiently mature cost structure or to have attained sufficient volume to provide useful data. Physician group practices were screened to determine whether their staff had performed outpatient surgical procedures during the past year. The sampling frame for hospitals was drawn from the American Hospital Association's 1989 Annual Survey of Hospitals. The sampling frame for ASCs was drawn from the SMG Marketing Group's Freestanding Outpatient Surgery Centers Database (1990 data). The sampling frame for physician group practices was drawn from the 1992 Medical Group Management Association's (MGMA) Directory.

2.6.3 Sample Selection

The selection method used employed a cluster sampling plan that insured that procedures in hospitals and ASCs had equal probabilities of being sampled. A different sampling approach was used for physician practices.

As noted, hospitals have been sampled from the American Hospital Association's 1989 Annual Survey of Hospitals using probability proportional to size sampling. Certain hospitals have been excluded: those outside the continental United States, all federal or long-term stay hospitals, and those with outpatient surgical volumes below 1,000 procedures per year. In addition, hospitals with fewer than 1,000 clinic visits were excluded. A complete list of hospitals was prepared along with a cumulative distribution of outpatient surgical procedures.

A sampling interval was calculated by dividing the total number of procedures among hospitals (approximately 10 million), by the sample size 144 (this number, three times the desired sample size, insures that sufficient hospitals are randomly selected since some hospitals refused to participate). The resulting sampling interval was 71,043. Procedures were selected by choosing a random starting place in the cumulative list of procedures. Every 71,043rd procedure thereafter was selected. The sample of hospitals was identified as those 144 hospitals in which the sampled procedures were performed. After sampling, the 144 hospitals were randomly sorted. The first 48 were contacted to participate in the study. If a hospital refused, it was replaced with an already sampled hospital in the same region that matched it on urban/rural and teaching status, if possible. Using this approach, usable data were collected from a final sample of 34 hospitals. These hospitals are named in Appendix B.

The ambulatory surgery center sample was selected in the same way as the hospitals. The SMG Marketing Group's Freestanding Outpatient Surgery Centers Database was used to list all qualifying ASCs as well as to provide a cumulative distribution of surgical procedures. As with hospitals, ASCs outside the continental U.S. or those having fewer than 1,000 surgical

procedures were deleted. Additionally, ASCs less than three years old were deleted as were those not Medicare certified. A sampling interval of 11,941 procedures, based on a sample of 144 with a total outpatient surgical volume of 1,721,036 was established. Usable data were collected from a final sample of 32 ASCs.

To minimize costs, physician group practices were selected from the same locales as sampled hospitals. One physician practice was selected randomly in the geographic area of each of the sampled hospitals. The MGMA Directory was used to create a list of practices in each locale. Because the volume of surgery in each practice is not known, it is not possible to sample proportional to size. However, to increase the likelihood of contacting a practice that performs ambulatory surgery, emphasis was given to those practices identified in the MGMA Directory as at least providing services in gastroenterology, general surgery, ophthalmology, or urology.

Exhibits 2-3 and 2-4 present the characteristics of the sampled hospitals, ASCs and physician group practices. Exhibit 2-3 identifies the geographic distribution of providers included in the sample. For each type of provider, Exhibit 2-4 shows the number of providers classified by region, urban/rural status, and teaching status (for hospitals only). In general, the sample distributions are similar to those in the population, and indicate that the facilities where data were collected are adequate with regard to representativeness.

As discussed, samples were selected according to the schema discussed above; the data presented in Exhibit 2-4 are intended only to present an understanding of the distribution of the sample as well as an understanding of the impact of the difficulty encountered in seeking participation from providers. The regions used are the aggregate Census regions used by the Department of Commerce. It is not intended for analyses to identify differences in cost by region. Urbanicity was defined by whether or not the provider was within a Metropolitan Statistical Area (MSA). Data on hospital teaching status is presented to describe the representativeness of the hospital sample in regard to teaching status. As discussed in this chapter and in subsequent chapters, teaching status has far less impact on the costs of ambulatory services that were measured, i.e., ambulatory surgery, radiology, laboratory and clinic services than it does on inpatient or emergency services.

As indicated, the sample studied included 35 hospitals, 32 ASCs, and 25 physicians' offices. It was not expected that this provider sample would yield a sufficient number of procedures in each APG to meet the requirements of statistical precision at 90 percent. However, this sample size was sufficient to provide illustration of the validity of the study methodology.

In general, estimation of sample size under simple random sampling of populations that are not normally distributed uses the following equation:

$$n = \left[(\sigma * t_{n-2, .10}) / e \right]^2$$

where: n is the sample size,

σ is the standard deviation

e is the tolerable error (determined by the analyst) and

t is a value of the t distribution, 10 percent significance, n - 2 degrees of freedom, two-tailed.

DISTRIBUTION OF DATA COLLECTION SITES



DATA COLLECTION SITES

HOSPITALS

	INITIAL SAMPLE	EMPIRICAL SAMPLE	INITIAL SAMPLE PERCENT	EMPIRICAL SAMPLE PERCENT	PERCENT - U.S. COMMUNITY HOSPITALS ¹
Region					
Northeast	12	10	25.0	28.6	28.4
Midwest	11	8	22.9	22.9	22.6
South	15	8	31.3	22.9	23.2
West	10	9	20.8	25.7	25.8
Urbanicity					
Urban	40	29	83.3	82.9	87.6
Rural	8	6	16.7	17.1	12.4
Teaching Status					
Teaching	26	14	54.2	40.0	49.9
Non-Teaching	22	21	45.8	60.0	50.1

¹ Source: American Hospital Association

ASC's

	INITIAL SAMPLE	EMPIRICAL SAMPLE	INITIAL SAMPLE PERCENT	EMPIRICAL SAMPLE PERCENT	PERCENT - U.S. ASCs ²
Region					
Northeast	4	2	8.3	6.3	7.0
Midwest	10	6	20.8	18.8	15.2
South	21	15	43.8	46.9	55.4
West	13	9	27.1	28.1	22.4
Urbanicity					
Urban	39	28	81.3	87.5	90.6
Rural	9	4	18.7	12.5	9.4

² Source: SMG Marketing Corp.

PHYSICIAN OFFICES

	EMPIRICAL SAMPLE	EMPIRICAL SAMPLE PERCENT
Region		
Northeast	6	24.0
Midwest	6	24.0
South	4	16.0
West	9	36.0
Urbanicity		
Urban	22	88.0
Rural	3	12.0

One method for determining the precision of the estimate is to calculate the tolerable error as a function of the estimated mean value (\bar{O}). In this case, it was decided that a tolerable error around the mean estimate for each APG or CPT was 10 percent. (It should be noted that this measure of precision is not directly related to the level of significance embodied by the t value. It would be perfectly reasonable to assume a 5 percent level of precision with a significance level of 10 percent.)

$$e = .10 * \mu$$

It should be noted that the variables used to assess the significance of the sample sizes are direct costs and total costs. This allows the determination of adequacy of sample size for all the subsequent analyses, as all are based on direct, total or some component of total costs.

Required sample sizes varied from a low of 10 procedures to a high of over 2,500 procedures (for a CPT with a relatively small mean, and extremely large standard deviation). The required sample size for ambulatory surgery procedures based on direct costs were less than the available sample size for 157 categories of the 436 CPT-4 codes included in the study. The required sample sizes for laboratory procedures and medical visits based on direct cost were reached for none of the categories examined; the required sample sizes for radiological procedures were less than the actual sample sizes for nine of the 47 procedure categories examined. Generally, the sample size requirements for these APGs could be satisfied by collecting data at additional facilities.

The required sample sizes for ambulatory surgery procedures based on total resource costs were satisfied by the current sample for 82 of the 436 categories of CPT-4 codes examined. The total cost determined required sample sizes for radiological procedures and medical visits were reached in the sample in two of the categories examined for each; no laboratory procedures had adequate actual sample sizes at the 10 percent level of significance.

In order to understand differences in costs among types of providers, most presentations in subsequent chapters separate findings for OPDs, ASCs and physician offices. Sample sizes which may be sufficient when all providers are combined, will probably not be sufficient for OPDs or ASCs considered separately. For this reason, tables presented in subsequent chapters identify sample sizes and the presence of statistically significant differences for each provider type.

It should be noted that although the study sample (based on direct costs) was sufficient for only 22 percent of the ambulatory surgery procedure APGs studied, 38 percent of the radiology procedure APGs, and zero percent of the medical diagnoses and laboratory procedure APGs, the APGs that were found to have sufficient sample size account for the largest portion of ambulatory surgical volume. When weighted by the number of claims, the sample is found to be sufficient for 71 percent of Medicare claims. When weighted by the cost of claims, the sample is sufficient for 82 percent of Medicare ambulatory surgery cost. The sample is sufficient for measuring the cost of all high volume APGs, including cataract procedures, dilation and curettage, upper and lower diagnostic gastrointestinal procedures and simple excision and biopsy.

It should be understood that the sample of physicians' offices included in the study was not intended to be representative. Physician office data were collected to gain an understanding of the services provided in these settings and to provide a limited base for comparison to other settings. All analyses presented in this report for physicians' offices should be considered as preliminary.

2.7 DATA COLLECTION

Data collection was undertaken by a team of researchers who were responsible for all data collected from a participating provider. Providers that agreed to participate were presented with a comprehensive understanding of the data that would need to be collected. Prior to on-site data collection, each provider was asked to identify which of the procedures that had been selected as seed procedures were performed in their facility and how many times they were performed during the most recent fiscal year. When these procedure counts were returned, providers were sent draft resource profiles for each of the procedures they identified. Draft profiles were prepared by clinical panels. Provider staff were asked to use the draft profiles as a guide and to complete the profiles so that they accurately reflected how procedures were performed in their facilities. Only resource use was included in the profiles; unit cost data were collected by on-site project staff. Approximately 35 procedures were profiled at the average hospital, 19 procedures at the average ASC, and 9 procedures at the average physician office.

Project staff visited each participating provider to gather the completed resource profiles and to collect unit costs and other required data. During this visit, which typically lasted three days for hospitals and one day each for ASCs and physician offices, researchers also answered questions about resource profiles and reviewed their final content. Sources of unit cost data were identified in the preceding discussion of cost elements. Diverse sources were used, including payroll records, purchase invoices and providers' general ledgers. Data were collected using a software program that was specifically designed for the study. The content of the software is presented in Appendix C.

3. RESOURCE COSTS OF OUTPATIENT SERVICES

3. RESOURCE COSTS OF OUTPATIENT SERVICES

3.1 INTRODUCTION

This chapter is devoted to a presentation and discussion of the resource costs of outpatient services incurred by providers included in the study. The chapter addresses direct and indirect costs separately. Resource requirements and their unit costs are discussed in the presentation of direct costs. Two hundred eighty-two ambulatory surgical procedures, 28 radiology procedures, 37 laboratory procedures and 83 codes for medical visits were included in the study. Detailed data on the costs of each procedure/visit are available in the study's database (Exhibits 3-39 through 3-42) although the chapter focuses on summary data and selected procedures. Several discussions identify costs for the procedures that account for the greatest portion of Medicare costs. Data on all procedures studied are presented in a series of appendices. Data on the costs of hospitals, ambulatory surgery centers and physician offices are presented separately to enhance understanding, but costs in different settings are not compared in this chapter. Such comparisons are presented in Chapter 4.

The chapter's first section identifies the resource requirements associated with the provision of ambulatory care. In addition to the presentation of summary data, this section includes a set of resource profiles that document all direct resources associated with selected high volume procedures.

The second section focuses on identification of the unit cost of resources. Differences in unit costs are identified in general and specific attention is devoted to differences in the costs of nursing salaries and a single high cost supply, intraocular lenses used in cataract surgery. This section concludes with a presentation of total direct costs and the effect of volume on direct costs.

The third section is a discussion of indirect costs. Indirect labor, indirect equipment and overhead have been measured separately in the study and costs associated with each of these components are discussed. Definitions of each component, which were presented in the preceding chapter, are discussed in the context of the data that were collected. Mean indirect costs for all procedures and for high volume procedures are identified. This discussion also addresses the impact of volume on indirect costs.

The chapter's final section summarizes the data presented. Data on total costs for high volume procedures are presented and discussed. Similar data for all procedures and visits included in the study are presented in a comprehensive exhibit. Discussions in this section include initial comparisons of costs across outpatient settings. Complete cross-setting comparisons are discussed in detail in the next chapter.

3.2 RESOURCE REQUIREMENTS

The general models presented in the preceding chapter provide insight into ambulatory care resource requirements. In Chapter 2, resource requirements were identified within broad categories of personnel time, supplies, pharmaceuticals, equipment, anesthesia and indirect costs.

The importance of each resource varies by type of ambulatory service although for most ambulatory surgery and all medical visits, time is especially important. Overall, the intensity of resource use is high for ambulatory surgery in comparison to the other categories of care. A broader array of resources are also used for ambulatory surgery. In this section and in the appendices that are referenced, resource requirements are presented and discussed. The overall distribution of resource requirements for each type of ambulatory service studied is presented and costs of selected resources for high volume procedures and visits is discussed. In addition, resource profiles that fully identify resources used for a small sample of frequently encountered ambulatory surgery and radiology procedures are presented. These profiles are used to build an understanding of the composition of broad categories of resources used for specific procedures.

3.2.1 Ambulatory Surgery

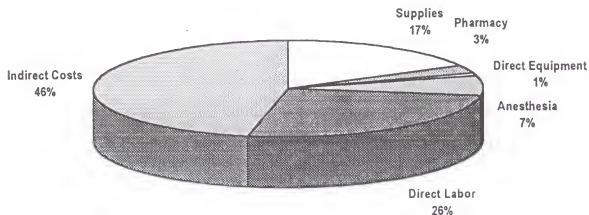
The distribution of resource requirements is reflected in the distribution of costs among resources for types of services. The distribution of ambulatory surgery costs for procedures performed in hospitals is presented in Exhibit 3-1 and the distribution of ambulatory surgery costs for procedures performed in ASCs is presented in Exhibit 3-2. As shown in the exhibits, direct costs account for more than half of all costs in hospitals (54 percent) and less than half of all costs in ASCs (48 percent). Labor, the largest component of direct cost, accounts for 49 percent of direct costs and 26 percent of total cost in hospitals and 44 percent of direct costs and 21 percent of all costs in ASCs. The next largest component of direct cost, supplies, accounts for 17 percent of total costs and 32 percent of direct costs (hospitals) and 17 percent of total costs and 36 percent of direct costs (ASCs). The remaining costs, i.e., anesthesia, pharmaceuticals and direct equipment, account for 11 percent of total cost and 19 percent of direct cost (hospitals) and 10 percent of total costs and 20 percent of direct costs (ASCs). It is often assumed that labor accounts for approximately one-third of total ambulatory surgery costs. The labor identified in Exhibits 3-1 and 3-2 do not include indirect labor, which when added to direct labor, would yield approximately one-third of total cost.

Although labor is the largest component of direct cost, costs of other direct resources exceed direct labor costs for some procedures. Most importantly, the cost of intraocular lenses used in cataract procedures is sufficiently high to create supply costs that are higher than labor costs for that procedure. Cataract procedures and the costs of intraocular lenses are discussed in depth later in this chapter.

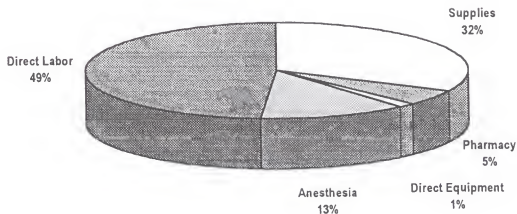
Anesthesia costs that are included in these analyses do not include the costs of anesthesiologists. Since only facility costs are included in this study, anesthesia costs are defined as the costs of anesthesia drugs and supplies. Although some facilities may hire anesthesiologists and nurse anesthetists and thus incur facility costs for professionals, these costs are not included in this analysis to assure comparability across sites.

EXHIBIT 3-1

DISTRIBUTION OF TOTAL COSTS, AMBULATORY SURGERY PROCEDURES, HOSPITALS



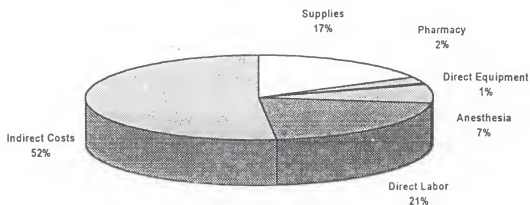
DISTRIBUTION OF DIRECT COSTS, AMBULATORY SURGERY PROCEDURES, HOSPITALS



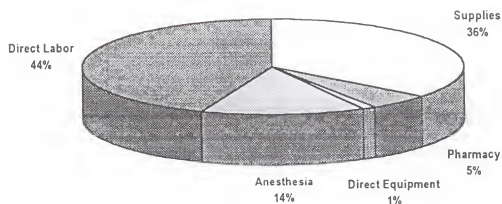
SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

EXHIBIT 3-2

DISTRIBUTION OF TOTAL COSTS, AMBULATORY SURGERY PROCEDURES, ASCS



DISTRIBUTION OF DIRECT COSTS, AMBULATORY SURGERY PROCEDURES, ASCS



SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

3.2.1.1 Operating Room Time. Operating room time is a significant determinant of direct cost for many ambulatory surgery procedures. Data on operating room time for the ambulatory surgery procedures that have the highest costs for the Medicare program are presented in Exhibit 3-3. Data on operating room time for all procedures are presented in Appendix D. Procedures included in Exhibit 3-3 account for approximately 70 percent of all Medicare funds spent for ambulatory surgery. These procedures are also used to illustrate other cost components in subsequent discussions. In addition, Exhibit 3-3 identifies operating room time for all ambulatory surgery procedures studied. It should be understood that data presented in this and subsequent exhibits in this chapter for all procedures represent simple, not weighted averages. Since a small number of procedures account for a very high proportion of all procedures performed, it is less useful to use a weighted average. Data for all procedures are presented in this and similar exhibits to provide a reference point for comparisons of data for each specific procedure. Such a reference point is best represented by a simple average.

Most procedures have operating room times of 60 minutes or less; in only four of the twenty cases examined the average operating room time exceeds that figure. There is little variation in the range of operating room time for specific procedures for two reasons. First, the majority of ambulatory surgery procedures are routine, which means that most surgeons have identified surgical methods that are fairly uniform. Second, if the study focused on operating room times for each surgeon within each facility, differences due to experience and style of surgeon would have been likely to be noted. The study, however, identified an average operating room time for each participating facility, which means that surgeon-specific differences are not identifiable.

It is difficult to identify a pattern in amounts of operating room time required to complete procedures. Scope procedures have relatively short operating room times, e.g., an upper G.I. endoscopy (CPT code 43235) requires only 33.75 minutes in a hospital and 30.42 minutes in an ASC. A cystourethroscopy (CPT code 52000) requires only 33.27 minutes in a hospital and 30.36 minutes in an ASC. Other procedures, which may be more invasive than scope procedures, such as repair of an inguinal hernia (CPT code 49505), requires almost an hour of operating room time in a hospital and considerably more in an ASC. Procedures that are not invasive but which require proportionally greater operating room time include ophthalmologic procedures, especially laser surgery procedures.

The mean operating room times were statistically greater for hospitals for six of the procedures studied; the mean operating room time was greater for ASCs in one procedure, and there was no statistical difference between facility types for the remaining three procedures. When all ten procedures are aggregated, hospitals had significantly higher operating times.

3.2.1.2 Recovery Room Time. Causes for greater amounts of time spent in recovery are more easily identified. Type of anesthesia directly affects recovery room time, with the longest recovery times required for patients who have received a general anesthetic. Procedures such as tonsillectomies and adenoidectomies, dilation and curettage and most arthroscopic procedures require the use of a general anesthetic. Scope procedures use lighter IV sedation and require much shorter recovery room times. Most scope procedures require 60 minutes or less of

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR OPERATING ROOM TIME (MINUTES),
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TIME		MEDIAN TIME		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN TIME	HIGHER ASC MEAN TIME	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	71.91	54.00	83.50	50.00	20.70	16.01	✓		
45378	Colonoscopy, diagnostic	27	13	50.11	35.92	45.00	30.00	22.22	13.58	✓		
45385	Colonoscopy, for removal of polypoid lesion	25	15	61.24	47.27	60.00	45.00	16.41	17.03	✓		
49505	Repair of inguinal hernia, age 5 or over	27	20	57.56	73.70	45.00	75.00	16.21	18.79		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	38.07	36.08	45.00	30.00	10.08	13.01			✓
43235	Upper GI endoscopy, diagnostic	24	12	33.75	30.42	32.50	30.00	5.76	8.38			✓
19120	Excision of cyst	31	23	60.65	55.22	60.00	60.00	11.24	8.72	✓		
52000	Cystourethroscopy (separate procedure)	26	14	33.27	30.36	30.00	30.00	10.48	4.99			✓
45380	Colonoscopy, for biopsy	27	14	60.19	44.36	60.00	42.50	20.78	14.16	✓		
66821	Discission of secondary membranous cataract	12	12	47.50	30.83	60.00	30.00	15.45	19.13	✓		
	ALL PROCEDURES LISTED ABOVE	248	159	51.61	46.62	45.00	45.00	19.86	19.57	✓		

Source: CHPS Outpatient Resource Costing Data Base

recovery room time while procedures that require use of a general anesthetic normally require more than 120 minutes of recovery room time. Recovery room nurses must also spend more time with patients who have received a general anesthetic.

3.2.1.3 Direct Labor Costs. Recovery room time and operating room time have the greatest impact on the determination of direct labor costs. Data on direct labor costs are presented in Exhibit 3-4. Mean and median direct labor costs for high volume procedures and for all procedures studied are included in the exhibit as is the standard deviation in direct labor costs for each procedure. Comparable data for all procedures studied are presented in Appendix E. These costs include only the costs of nurses and technicians involved in preparing patients for surgery, in supporting operating room activities and in providing services in recovery rooms. Costs are influenced by operating room and recovery room times and by nursing and related personnel salaries. As discussed subsequently, differences in salary costs were not found to be significant, which means that much of the difference in direct labor cost is due to differences in operating room and recovery room time.

It should be noted that in more than half the cases, mean direct labor costs exceed median costs which means that there are a larger number of providers whose direct labor costs are below the mean than above the mean. Although this skewed distribution is not universal and is not significant in most instances, it is noteworthy as a general finding. A small number of facilities have direct costs that are exceptionally high, which leads to the distribution that has been noted.

In general, there was no statistical difference between direct labor costs for hospitals and ASCs. For two procedures, the lens procedures, the hospitals had significantly higher direct labor costs. In no other cases were there any statistically significant differences.

3.2.1.4 Direct Costs of Supplies. Supplies are the next largest component of direct costs. Data on the mean and median costs of supplies and the standard deviation of supplies costs for high volume procedures are presented in Exhibit 3-5. Comparable data for each procedure included in the study are presented in Appendix F. Supplies include both disposable and reusable supplies in the proportion by which they are used by the providers included in the study. Costs of supplies vary more substantially than the costs of labor. A small number of procedures, e.g., lens procedures, have exceptionally high supply costs because of the costs of a single item, while other procedures require a large number of different types of supplies. It is important to note that supply data included in analyses do not include drug or anesthesia costs. These supplies are calculated as separate cost components. Detailed information on each supply used for each procedure by each provider studied is available in the study's data base.

Most of the providers studied used far more disposable supplies than reusable supplies. In fact, disposable supplies typically account for more than 95 percent of total supply cost. Reusable supplies that are frequently used include blood pressure cuffs, basin sets, trays for placement of instruments and instruments. Costs of these supplies are high, but they are used so frequently that per procedure costs are low.

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR DIRECT LABOR COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	183.79	113.67	172.24	119.70	59.25	44.13	✓		
45378	Colonoscopy, diagnostic	27	13	85.74	91.85	93.02	77.53	26.64	39.29			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	90.71	100.93	82.70	101.79	26.68	41.60			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	146.60	153.69	134.21	147.00	53.01	39.43			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	85.55	84.05	80.10	75.22	28.32	39.87			✓
43235	Upper GI endoscopy, diagnostic	24	12	79.58	89.04	76.55	86.92	19.63	43.52			✓
19120	Excision of cyst	31	23	136.16	119.76	131.06	125.48	32.41	40.06			✓
52000	Cystourethroscopy (separate procedure)	26	14	125.85	104.88	133.70	108.09	44.87	38.17			✓
45380	Colonoscopy, for biopsy	27	14	95.00	102.16	88.06	102.78	24.29	41.87			✓
66821	Dissection of secondary membranous cataract	12	12	149.73	76.70	163.01	72.88	34.14	59.88	✓		
	ALL PROCEDURES LISTED ABOVE	248	159	115.56	107.74	104.34	107.97	48.74	46.76			✓

Source: CHPS Outpatient Resource Costing Data Base

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR COSTS OF TOTAL SUPPLIES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	344.02	308.97	295.40	286.92	151.26	111.66			✓
45378	Colonoscopy, diagnostic	27	13	58.05	54.51	58.29	49.70	15.06	14.47			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	72.30	67.12	72.10	64.59	14.11	14.55			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	98.70	110.89	92.01	114.41	19.41	40.95			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	77.34	75.36	74.51	57.58	27.77	48.06			✓
43235	Upper GI endoscopy, diagnostic	24	12	76.04	70.06	76.67	61.21	19.63	20.86			✓
19120	Excision of cyst	31	23	87.92	89.26	85.25	85.16	16.33	16.73			✓
52000	Cystourethroscopy (separate procedure)	26	14	67.35	78.07	67.48	72.02	8.12	21.16		✓	
45380	Colonoscopy, for biopsy	27	14	68.42	76.83	64.75	69.77	12.85	28.88			✓
66821	Disscission of secondary membranous cataract	12	12	208.36	68.93	241.95	51.83	73.10	80.93	✓		
	ALL PROCEDURES LISTED ABOVE	248	159	106.23	112.72	77.77	80.20	94.32	97.75			✓

Source: CHPS Outpatient Resource Costing Data Base

There are no patterns of statistical significance of facility type for supplies costs. For one procedure, ASCs have the higher cost, while for one other procedure hospitals have the higher cost. There is no difference between supplies costs for eight of the ten procedures examined.

3.2.2 Radiology

A total of 28 radiology procedures were studied, including plain film x-rays, magnetic resonance imaging (MRI) and computerized axial tomography (CAT). Analyses similar to those for ambulatory surgery were completed. The distribution of costs for all radiology procedures studied is presented in Exhibits 3-6 (hospital outpatient departments) and 3-7 (physician offices).

Direct costs account for 60 percent of all costs in hospitals and 55 percent of all costs in physician offices; pharmaceutical costs are the largest single component of direct cost in hospitals, comprising 38 percent of total costs. Direct equipment and direct labor are the largest components of direct costs in physicians offices, accounting for 29 percent and 26 percent of direct costs respectively. The relatively high proportion of cost represented by pharmaceuticals varies by procedure. As expected, direct equipment costs are much more significant for radiology (12 percent of total costs in hospitals and 16 percent of total costs in physician offices) than for ambulatory surgery.

Procedure-specific costs of direct labor for radiology are presented in Exhibit 3-8. Ten high volume procedures have been selected for the exhibit; data on each procedure studied are presented in Appendix G.

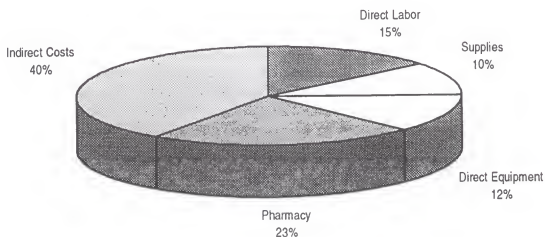
Overall, hospitals had significantly higher direct labor costs for these ten radiology procedures than did physicians offices. There was no difference on a single procedure level, possibly due to the small sample sizes.

Pharmaceuticals are an extremely important component of cost for some procedures such as radionuclide therapy (CPT code 79100). In the case of radionuclide therapy, pharmaceuticals represent approximately 80 percent of total costs while for several procedures such as mammography and plain film x-rays, there are no pharmaceutical costs. Other cost components are fairly consistent across procedures.

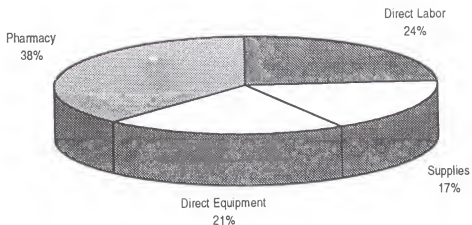
Equipment costs, which vary substantially by procedure, are especially significant for radiology procedures. Only direct equipment costs are identified in Appendix G. Direct equipment includes all equipment that is directly related to a procedure. For magnetic resonance imaging, the cost of the MRI, itself, is considered a direct cost. If other equipment which can be used for other procedures is also used, it is classified as indirect. For mammography, the cost of the mammography equipment is considered direct while all other equipment costs are considered to be indirect. In most instances, direct equipment costs exceed indirect equipment costs although for some procedures, e.g., ultrasound, mammography and angiography, costs of direct equipment are comparatively lower than costs of indirect equipment.

**DISTRIBUTION OF TOTAL COSTS, RADIOLOGY PROCEDURES,
HOSPITALS**

EXHIBIT 3-6

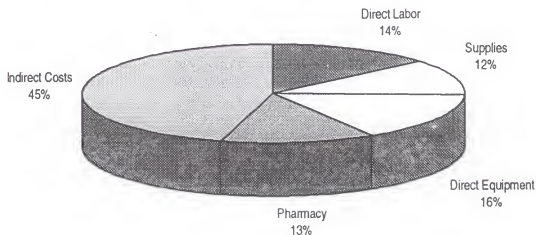


**DISTRIBUTION OF DIRECT COSTS, RADIOLOGY PROCEDURES,
HOSPITALS**

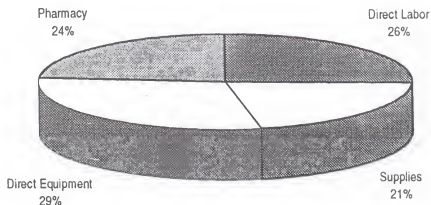


SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

DISTRIBUTION OF TOTAL COSTS, RADIOLOGY PROCEDURES, PHYSICIANS OFFICES **EXHIBIT 3-7**



DISTRIBUTION OF DIRECT COSTS, RADIOLOGY PROCEDURES, PHYSICIANS OFFICES



SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR DIRECT LABOR COSTS,
SELECTED RADIOLOGY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO SIGNIFICANT DIFFERENCE
70551	Magnetic resonance imaging	12	2	32.07	22.26	31.53	22.26	20.91	12.05			✓
70470	Computerized axial tomography	20	3	22.74	18.01	19.29	16.49	12.05	4.74			✓
76091	Mammography, bilateral	18	7	11.57	10.26	12.09	11.32	5.41	4.93			✓
71010	Radiologic examination, chest; single view, frontal	23	7	4.24	3.68	3.31	2.33	2.79	2.95			✓
73510	Radiologic examination, hip, complete	22	10	7.49	7.83	6.09	6.78	4.14	4.07			✓
75631	Aortography, abdominal	17	0	95.71	NA	93.40	NA	34.67	NA			NA
74240	Radiologic examination, gastrointestinal tract, upper	18	5	14.29	21.56	13.22	28.55	8.02	11.57			✓
73041	Radiologic examination, shoulder, arthrography	17	5	23.59	18.24	22.26	16.46	13.22	9.16			✓
78306	Bone imaging, whole body	18	3	36.96	40.17	38.31	43.98	17.91	13.27			✓
77430	Weekly megavoltage treatment management; complex	2	0	91.34	NA	91.34	NA	108.46	NA			NA
	ALL PROCEDURES LISTED ABOVE	167	42	26.61	14.14	16.02	10.74	31.77	11.69	✓		

Notes

- 1 Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- 2 The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices.

Source: CHPS Outpatient Resource Costing Data Base

3.2.3 Laboratory

The distribution of laboratory costs for the 37 laboratory procedures studied are presented in Exhibits 3-9A and 3-9B. Indirect costs account for more than half (72 percent) of all costs and supplies are the largest component of direct costs (46 percent) for hospitals. For physicians offices, indirect costs account for 74 percent of total costs and supplies comprise 58 percent of direct costs. Direct labor costs that were measured (12 percent of total costs for hospitals and 8 percent of total costs for physicians offices) are primarily attributed to the costs of obtaining specimens. As expected, supplies (13 percent of total costs for hospitals and 15 percent for physicians offices) and direct equipment (3 percent of total costs for both hospitals and physicians offices) are the next largest components of direct cost. Pharmacy is the remaining component of direct cost, accounting for less than one percent of direct and total costs for both hospitals and physicians offices.

Costs of laboratory procedures are low in comparison to other services studied although costs range substantially. Some high volume procedures, e.g., simple blood chemistry and simple microbiology, have relatively low costs. Mean and median costs for direct labor for high volume laboratory procedures are presented in Exhibit 3-10. Standard deviations and sample size are also shown. Comparable data for each procedure studied are presented in Appendix H.

3.2.4 Medical Visits

The distribution of medical visit costs for hospitals and physician offices is shown in Exhibits 3-11A and 3-11B. As indicated in the exhibit, direct labor is the only direct cost incurred, accounting for 20 percent of total costs for hospitals and 15 percent of total costs for physicians offices. If pharmaceuticals and/or supplies are used, they are not directly related to the nature of the visit and, in this analysis, are included in indirect costs. Eighty-three medical visit codes were investigated. As discussed in Chapter 2, medical visits were identified by ICD9-CM codes. Mean costs for direct labor required for high volume medical visits are presented in Exhibit 3-12 and comparable data for all medical visits studied are presented in Appendix I.

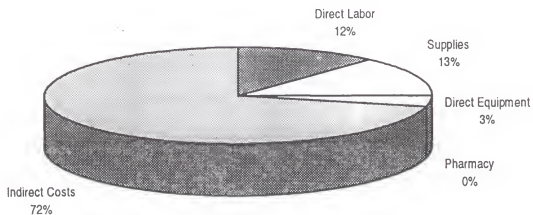
For seven of the ten high volume procedures studied, hospitals had significantly higher direct labor costs than did physicians offices. Physicians offices had higher direct labor costs for none of the procedures studied. For the ten procedures as a group, the hospital direct labor cost was statistically higher.

3.2.5 Resource Requirements of Specific Procedures

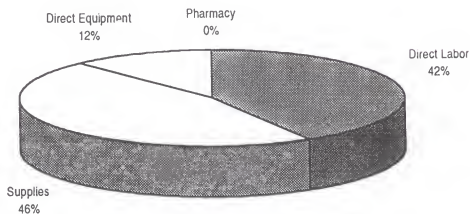
The project's data base includes detailed resource profiles for all procedure and visit codes studied. Profiles are maintained separately for each facility that participated in the study. A small number of procedures, however, are especially important because of their volume and cost. The resource requirements of these procedures are examined in depth in this section. The five ambulatory surgery and three radiological procedures included in the analysis were selected as examples. They are high volume procedures (although not necessarily high volume

DISTRIBUTION OF TOTAL COSTS, LABORATORY PROCEDURES,
HOSPITALS

EXHIBIT 3-9A



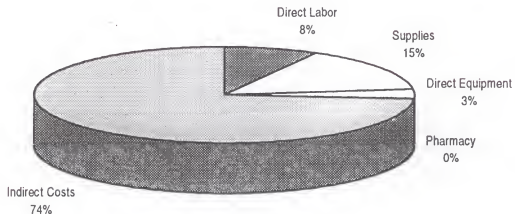
DISTRIBUTION OF DIRECT COSTS, LABORATORY PROCEDURES,
HOSPITALS



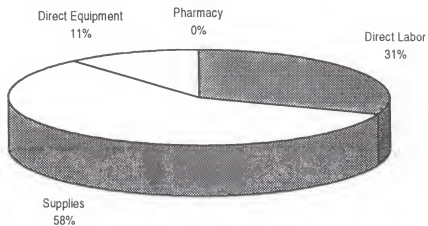
SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

**DISTRIBUTION OF TOTAL COSTS, LABORATORY PROCEDURES,
PHYSICIANS OFFICES**

EXHIBIT 3-9B



**DISTRIBUTION OF DIRECT COSTS, LABORATORY PROCEDURES,
PHYSICIANS OFFICES**



SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

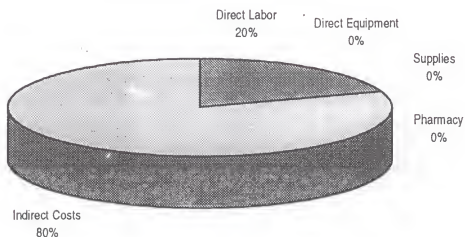
**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR DIRECT LABOR COSTS,
SELECTED LABORATORY PROCEDURES
(HOSPITAL OPDs)**

CPT CODE	PROCEDURE	SAMPLE SIZE	MEAN COST	MEDIAN COST	STANDARD DEVIATION
86074	Blood cross match antiglobulin technique	19	6.54	1.49	9.02
87070	Culture, bacterial, definitive; any source	19	9.00	2.97	11.79
82947	Glucose except urine	21	2.38	1.20	3.64
84132	Potassium; blood	22	1.95	0.60	2.43
84478	Triglycerides, blood	21	2.21	1.20	2.82
82270	Blood occult, feces screening	20	1.95	0.99	2.59
94700	Analysis of arterial blood gas	15	10.50	10.34	8.62
80019	Automated multichannel test, 19 or more tests	16	4.45	4.82	3.89
81000	Urinalysis, routine	23	4.27	0.00	7.07
85022	Blood count; hemogram, automated and manual differential	20	6.40	5.32	8.06
	ALL PROCEDURES LISTED ABOVE	196	4.74	1.61	7.08

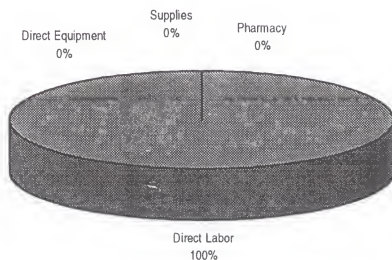
Source: CHPS Outpatient Resource Costing Data Base

DISTRIBUTION OF TOTAL COSTS, MEDICAL VISITS, HOSPITALS

EXHIBIT 3-11A



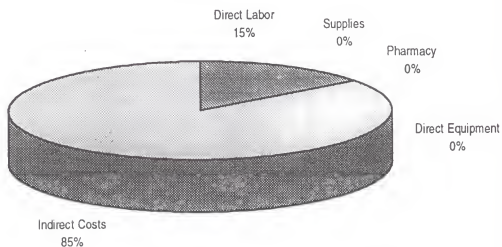
DISTRIBUTION OF DIRECT COSTS, MEDICAL VISITS, HOSPITALS



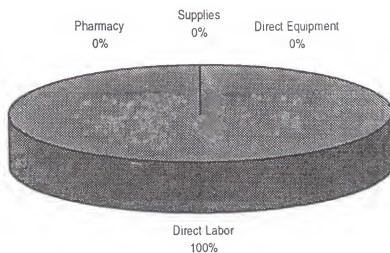
SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

**DISTRIBUTION OF TOTAL COSTS, MEDICAL VISITS,
PHYSICIANS OFFICES**

EXHIBIT 3-11B



**DISTRIBUTION OF DIRECT COSTS, MEDICAL VISITS,
PHYSICIANS OFFICES**



SOURCE: CHPS OUTPATIENT RESOURCE COSTING DATA BASE

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR DIRECT LABOR COSTS,
MEDICAL VISITS - SELECTED HIGH VOLUME DIAGNOSES**

ICD9-CM CODE	DIAGNOSIS	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO SIGNIFICANT DIFFERENCE
883 0	Open wound of finger without complication	9	8	18.30	9.66	24.31	11.22	13.32	4.94	✓		
616 1	Inflammatory disease of cervix, vagina, and vulva	12	10	18.75	4.44	15.71	3.77	11.83	2.61	✓		
382 9	Suppurative and unspecified otitis media	10	9	7.88	4.66	7.81	2.44	4.52	3.72			✓
784 0	Symptoms involving head and neck- headache	10	10	14.32	4.49	15.11	4.36	8.78	3.93	✓		
465 9	Acute upper respiratory infection- unspecified	11	10	18.86	4.14	10.98	6.48	18.30	3.84	✓		
780 3	General symptoms- convulsions	10	7	32.02	9.63	39.21	7.59	21.27	70.07	✓		
366 9	Cataract- unspecified visual disturbance	3	5	11.82	6.95	7.32	6.51	8.94	2.10			✓
601 9	Inflammatory diseases of prostate	10	10	9.98	5.02	8.11	3.96	5.44	3.82	✓		
493 9	Asthma- unspecified	10	8	33.79	17.26	28.27	16.97	23.35	7.63	✓		
365 11	Glaucoma- primary open angle glaucoma	3	5	15.45	14.38	14.64	4.88	3.56	16.72			✓
	ALL PROCEDURES LISTED ABOVE	88	82	18.85	7.71	12.74	6.42	16.25	7.02	✓		

Source: CHPS Outpatient Resource Costing Data Base

procedures for the Medicare program) that are frequently encountered in the ambulatory care literature. These procedures are:

- Extracapsular Cataract Removal with Insertion of Intraocular Lens (CPT 66984)
- Diagnostic Upper G.I. Endoscopy (CPT 43235)
- Therapeutic Arthroscopy, Knee (CPT 29877)
- Tonsillectomy with Adenoidectomy (CPT 42821)
- Dilation and Curettage (CPT 57820)
- Magnetic Resonance Imaging (CPT 70551)
- Computerized Axial Tomography (CPT 70450)
- Plain Film Chest Radiologic Examination (CPT 71010)

The resource profiles presented are examples of typical resource use and typical costs.

The profiles do not reflect average costs as found in the tables of this report. The profiles are presented to provide a full understanding of the resource requirements of these frequently encountered procedures.

3.2.5.1 Resource Requirements - Extracapsular Cataract Removal with Insertion of Intraocular Lens. A resource profile for CPT code 66984, Extracapsular Cataract Removal with Insertion of Intraocular Lens Prosthesis, is presented in Exhibit 3-13. The profile indicates that total direct cost for the procedure is \$575.20. Direct costs are identified in detail. The average patient is in the operating room for 50 minutes and in the facility for a total of 215 minutes, with 115 minutes spent in a preoperative area and 50 minutes spent in recovery. Direct labor costs of \$90.25 are attributed to 160 minutes spent by nurses in preparing the patient for surgery, in the operating room and in assisting the patient in recovery. It should be noted that several facilities use two nurses in the operating room rather than a nurse and a technician, but the nurse/technician combination was most common. Time spent by the surgeon, the anesthesiologist and the CRNA are identified in the profile although costs associated with their time are not included in the analysis since these professionals bill for their time separately and their costs are not included in facility costs. It is noteworthy that in this profile and in other surgical profiles, the time spent by the anesthesiologist does not match the time spent by the CRNA. This difference occurs because analyses in this study identify only time actually spent with patients. It is assumed that there anesthesiologists are meeting requirements of supervising CRNAs and are billing Medicare and other payers appropriately.

Disposable supplies account for the largest portion of costs for cataract surgery, primarily due to the need for the intraocular lens, for which a cost of \$238.00 is included in the profile. Mean cost of intraocular lenses for the study sample were lower (\$164.07), and clinicians who reviewed the profiles concluded that \$150.00 was a cost at which any facility should be able to obtain intraocular lenses. A more detailed analysis of lens costs is presented later in this chapter. Other high cost supplies are noted in the exhibit. The costs of pharmaceuticals are also high, with acetazolamide/diamox being the highest cost drug used in the procedure. Reusable supplies and direct equipment have minimal costs although some individual supplies and equipment have high costs. The rate at which these supplies and equipment are used, however, results in low

EXHIBIT 3-13

Procedure: Extracapsular cataract removal with insertion of intracocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Labor minutes by operating phase	Prel	Pre2	OR	Pat1	Pat2	Cost/Minute	Total Cost
Anesthesiologist.....	10	15	5	1	5	0.00000	0.00
Certified Registered Nurse Anesthetist (CRNA).....	20	5	5	5	0	0.00000	0.00
PATIENT.....	55	60	50	20	30	0.00000	0.00
Physician.....	0	25	38	0	0	0.00000	0.00
Registered Nurse (RN).....	5	15	110	10	20	0.47000	90.25

Total Direct Labor: 90.25

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
alcohol pad.....	2	0.05000	0.10
back table drape.....	1	1.74000	1.74
basin.....	4	0.25000	1.00
blade-Beaver #69.....	1	5.71000	5.71
blade-Beaver #75.....	1	3.71000	3.71
cannula-disposable.....	1	2.86000	2.86
corneal light shield.....	1	0.86000	0.86
drain-Weck.....	1	3.43000	3.43
drape-eye.....	1	9.71000	9.71
drape-utility.....	1	0.86000	0.86
EKG electrodes.....	3	0.23800	0.71
eye patch.....	2	1.28000	2.56
eye shield.....	1	1.14000	1.14
gauze 4x4 sterile.....	1 pkg of 10	0.57000	0.57
gloves-non sterile.....	2 pair	0.34000	0.68
gloves-surgical sterile.....	3 pair	0.76000	2.28
gown-surgical sterile.....	3	3.11000	9.33
head cover.....	7	0.10000	0.70
Inst wipe.....	1	1.68000	1.68
intraocular lens (IOL).....	1	238.00000	238.00
knife-Grieshaber.....	1	20.86000	20.86
mask-surgical.....	4	0.10000	0.40
Mayo stand cover.....	1	1.13000	1.13
microsponge.....	12	0.08900	1.07
needle protector.....	1	1.14000	1.14
needle-22 gauge Jelco.....	1	1.36000	1.36
needle-27 gauge.....	1	0.05000	0.05
needle-cystotome.....	1	2.29000	2.29
needle.....	10	0.05000	0.50
patient belongings bag.....	2	0.08000	0.16
phaco setup.....	1	10.00000	10.00
Q-tip.....	10	0.02000	0.20
shoe covers.....	6 pair	0.10000	0.60
Steri drape.....	1	4.25000	4.25
suture-ophth nylon 10-0.....	1	19.43000	19.43
suture-ophthalmic.....	1	5.00000	5.00
suture-vicryl 9-0.....	1	11.43000	11.43
syringe-10cc.....	10	0.10000	1.00

EXHIBIT 3-13 (CONT.)

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
syringe-3cc.....	3	0.10000	0.30
syringe-bulb.....	1	2.50000	2.50
syringe-TB.....	2	0.40000	0.80
tape-1" paper.....	2 roll	0.71000	1.42
thermometer probe cover.....	2	0.02000	0.04
tubing-BSS administration.....	1 roll	5.43000	5.43
tubing-IV.....	1	5.14000	5.14
tubing-oxygen.....	1	0.61000	0.61
tubing-suction.....	1	2.17000	2.17
Weck Cel spear sponges.....	20	0.86000	17.20

Total Disposable Supplies: 404.11

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
blood pressure cuff.....	1	187.00000	5000	0.04
eye instrument set.....	1	3304.00000	2000	1.65
forceps-cautery.....	2	218.90000	1000	0.44
goggles.....	1 pair	5.00000	100	0.05
hemostats.....	2	3.90000	15	0.52
phaco count.....	1	50.00000	100	0.50
phaco handpiece.....	1	50.00000	100	0.50
phaco tip.....	1	30.00000	100	0.30
stethoscope.....	2	44.50000	3000	0.03
temperature monitor-electronic.....	1	400.00000	3000	0.13
wrist rest.....	1	735.00000	1000	0.74

Total Reusable Supplies: 4.89

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
cautery machine.....	1	4000	5000	0.800000	0.80
microscope.....	1	7375	5000	1.475000	1.48
surgical stretcher.....	1	5967	5000	1.193400	1.19
video system.....	1	20830	3000	6.943333	6.94

Total Movable Equipment: 10.41

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Acetazolamide/Diamox.....	1.00	21.43000	21.43
BSS (500cc)/.....	500.00 cc	0.01540	7.70
H2O irrigation solution steril/.....	1500.00 ml	0.00038	0.57
Normal saline/.....	1000.00 ml	0.00114	1.14
Povidone iodine/Betadine.....	1.00	0.62000	0.62

EXHIBIT 3-13 (CONT.)

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Total Pharmaceuticals: 31.46

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Bupivacaine 0.75%/Marcaine 0.75%.....	8.00 cc	0.15000	1.20
Epinephrine/Adrenalin 1:1000.....	1.00 cc	1.17000	1.17
Fentanyl/Sublimaze.....	2.00 cc	2.29000	4.58
Hyaluronidase/Wydase.....	1.00 cc	4.86000	4.86
Methahexital/Brevital.....	7.00 cc	0.25000	1.75
Midazolam/Versed.....	2.00 mg	1.42200	2.84
Propofol/Diprivan.....	300.00 mg	0.04390	13.17
Sulfacetamide 10%/Sodium Sulamyd ointment.....	1.00 tube	4.50000	4.50

Total Anesthetics: 34.07

<u>Total Direct Cost:</u>	575.20	Indirect Labor Cost:	19.91
<u>Total Indirect Cost:</u>	259.01	Indirect Equipment Cost:	38.00
		Overhead:	201.10
<u>Total Cost of Procedure:</u>	834.21		

costs per procedure. Anesthesia costs are typical for a procedure that uses a block to anesthetize the patient. When other anesthesia approaches are used, costs are often higher. Anesthesia use varies among providers although the pattern identified in this resource profile is common.

3.2.5.2 Resource Requirements - Diagnostic Upper G.I. Endoscopy. A resource profile for Diagnostic Upper G.I. Endoscopy (CPT 43235) is presented in Exhibit 3-14. Total direct costs for this procedure are \$144.15 with pharmaceuticals accounting for the largest proportion of direct costs. The procedure typically uses three gallons of Gluteidehyde/Cidex, which costs \$10.39 per gallon. Disposable supplies account for the next largest component of direct costs, with tubing accounting for almost 40 percent of disposable supply costs.

Direct labor costs for this and other scope procedures are low in comparison to other procedures because the procedures are completed quickly and because only one nurse is required to assist the surgeon. A diagnostic upper G.I. endoscopy requires 14 minutes in the operating room and the patient is in the facility for a total of 104 minutes, including 30 minutes in a preoperative area and 60 minutes in recovery.

Intravenous (IV) sedation is used to anesthetize patients for most scope procedures. Costs of IV sedation are higher than costs for blocks, as shown in Exhibit 3-14. Demerol, which accounts for the majority of anesthesia costs in the profile, is widely used for IV sedation.

3.2.5.3 Resource Requirements - Therapeutic Arthroscopy, Knee. Total direct costs for a Therapeutic Arthroscopy (CPT 29877) are \$448.73, as presented in Exhibit 3-15. Most costs for this procedure are attributed to disposable supplies, direct labor and anesthesia. Three disposable supplies account for most of the supply costs incurred for the procedure. Because a general anesthetic is used, an anesthesia mask which costs \$45.82, is required. An arthroscopy pack, which includes specialized instruments and supplies, has the highest cost among disposable supplies (\$62.24). The next highest cost supply is a soft tissue electrode (\$40.75).

Several factors lead to higher labor costs for this procedure. First, because a general anesthetic is used, the patient has a longer recovery time and requires more intensive attention from recovery room nurses. Second, the procedure itself is fairly long (60 minutes) and the time of two nurses or a nurse and a technician are required for that period. As shown in the exhibit, the patient is in the facility for a total of 220 minutes when a therapeutic arthroscopy is performed.

Several anesthetics are used for the procedure with highest costs attributed to Succinyl Choline/Anectine, although other anesthetics can be used. The anesthesia pattern identified in the exhibit was most common among facilities that participated in the study.

EXHIBIT 3-14

CPT 43235 Diagnostic Upper G. I. Endoscopy

Most common anesthesia used: IV Sedation

Total Direct Cost: 144.15

Labor minutes by operating phase

	Test	Pre	Surge	Post	Cost/Minute	Total Cost
PATIENT.....	0	30	14	60		
Physician.....	0	0	14	5	0.00000	0.00
Registered Nurse (RN).....	0	15	14	30	0.55000	32.55

Total Direct Labor: 32.55

Movable Equipment

	Quantity	Price	# of Uses	Cost/Use	Total Cost
BP monitor.....	1	2700	7000	0.390000	0.35
computer.....	1	2500	10000	0.250000	0.25
gastroscope.....	1	13000	10000	1.300000	1.30
gastroscope cart.....	1	3000	5000	0.600000	0.60
light source-video.....	1	4200	25000	0.170000	0.17
printer-color.....	1	2120	25000	0.080000	0.08
pulse oximeter.....	1	1700	10000	0.170000	0.17
video cart.....	1	11000	10000	1.100000	1.10
video monitor.....	1	1395	25000	0.060000	0.06

Total Movable Equipment: 4.12

Disposable Supplies

	Quantity:Unit	Unit Cost	Total Cost
alcohol wipe.....	2	0.07290	0.15
angiocath.....	1	5.57700	5.58
film.....	1	6.89000	6.89
gauze 4x4 non-sterile.....	10	0.04000	0.40
gloves-non sterile.....	6 pair	0.34000	2.04
XY jelly.....	1 tube	0.30300	0.30
mask-surgical.....	3	0.19150	0.57
needle-20 gauge.....	1	0.03800	0.04
Op-site dressing.....	1	0.62200	0.62
oxygen nasal cannula.....	1	0.50000	0.50
shoe covers.....	6	0.05000	0.30
suction liner.....	1	1.22000	1.22
syringe 5cc.....	1	0.06930	0.07
tape-1/2" silk.....	1	1.53060	1.53
tubing-IV.....	1	0.65000	0.65
tubing-suction.....	2	7.14000	14.28
Yankauer suction tip.....	1	0.45000	0.45

Total Disposable Supplies: 35.59

Reusable Supplies

	Quantity:Unit	Unit Cost	# Uses	Total Cost
bite block.....	1	0.79000	100	0.01
blood pressure cuff.....	1	187.00000	5000	0.04
cytology brush.....	1	9.50000	100	0.10
dilators-balloon.....	2	133.00000	500	0.53
forceps-biopsy.....	1	230.00000	1000	0.23
glasses.....	3	19.12000	100	0.57
snare.....	1	34.35000	1000	6.03

Total Reusable Supplies: 1.51

Pharmaceuticals: Generic/Brand Name

	Dosage:Unit	Unit Cost	Total Cost
Flumazenil/Mazicon.....	20.00 cc	0.44000	8.80
Glutethide/Cidex.....	3.00 gal	10.39000	31.17
Lactated Ringers.....	500.00 ml	0.00089	0.45
simethicone drops/mylicon drops.....	1.00 bottle	10.36000	10.36

Total Pharmaceuticals: 50.77

EXHIBIT 3-14 (CONT.)

CPT 43235

Anesthetics: Generic/Brand Name

/demerol.....	Dosage:Unit	Unit Cost	Total Cost
Midazolam/Versed.....	50.00 mg	0.27860	13.93
	4.00 mg	1.42200	5.69

Total Anesthetics:	19.61
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EXHIBIT 3-15

CPT 29877 Therapeutic Arthroscopy, Knee

Most common anesthesia used: General

Total Direct Cost: 448.73

Labor minutes by operating phase	Test	Pre	Surge	Post	Cost/Minute	Total Cost
PATIENT.....	30	45	60	115		
Anesthesiologist.....	0	10	25	5	0.00000	0.00
Cert. Reg. Nurse Anest. (CRNA).....	0	5	60	5	0.00000	0.00
Physician.....	0	5	35	5	0.00000	0.00
Registered Nurse (RN).....	30	40	60	60	0.55000	104.81
Technician.....	0	0	60	0	0.31000	18.64

Total Direct Labor: 123.45

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
arthroscope.....	1	3000	3000	1.000000	1.00
arthroscopic irrigator.....	1	3100	5000	0.620000	0.62
arthroscopic leg holder.....	1	386	1000	0.390000	0.39
arthroscopy cart.....	1	7325	10000	0.730000	0.73
camera.....	1	9500	5000	1.900000	1.90
light cord.....	1	204	1000	0.200000	0.20
light source.....	1	4500	5000	0.900000	0.90
tourniquet.....	1	6400	10000	0.640000	0.64
tourniquet stand.....	1	6400	10000	0.640000	0.64

Total Movable Equipment: 7.02

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
Ace bandage 4".....	1	0.66000	0.66
anesthesia circuit.....	1	4.66000	4.66
anesthesia mask.....	1	45.82300	45.82
arthroscopy pack.....	1	62.23600	62.24
bandage-elastic 6".....	1	0.69900	0.70
blade-knife #15.....	1	0.20400	0.20
blade-shaver.....	1	0.23500	0.24
EKG electrodes.....	3	0.22500	0.68
electrode-soft tissue.....	1	40.75000	40.75
endotracheal tube.....	1 tube	0.22500	0.23
esophageal stethoscope.....	1	3.44350	3.44
gloves-non sterile.....	4 pair	0.34000	1.36
gloves-surgical sterile.....	4 pair	0.76000	3.04
grounding pad.....	1	2.35400	2.35
head cover.....	5	0.10000	0.50
Kling 4".....	1	0.23000	0.23
mask-surgical.....	4	0.19160	0.77
needle-20 gauge Jelco.....	1	0.03800	0.04
Op-site dressing.....	1	0.62200	0.62
oral airway.....	1	0.73000	0.73
patient belongings bag.....	1	0.08000	0.08
shoe covers.....	4 pair	0.10000	0.40
skin marker.....	1	1.34700	1.35
stockinette.....	1	17.45000	17.45
suction cannister 1500cc.....	1	1.91400	1.91
suction liner-1500cc.....	1	1.22000	1.22
suture-nylon 3-0.....	1	4.35000	4.35
tubing- IV extension w/ stopcock.....	1	0.65000	0.65
tubing-IV.....	1	0.65000	0.65

Total Disposable Supplies: 197.31

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
arthroscopy instrument set.....	1	500.00000	2000	0.25
basin set.....	1	20.00000	500	0.04
blood pressure cuff.....	1	187.00000	5000	0.04
temperature monitor-electronic.....	1	400.00000	2000	0.20
towel pack.....	2 4/pkg	10.00000	100	0.20

Total Reusable Supplies: 0.72

EXHIBIT 3-15 (CONT.)

CPT 29877

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
/Betadine scrub.....	1.00 16 oz bot.	1.20000	1.20
/Betadine solution.....	4.00 oz	0.77250	3.09
/reglan.....	10.00 mg	0.04267	0.43
Acetaminophen/Tylenol w/ cod #3.....	2.00 tablet	0.32800	0.65
Bacitracin/Neosporin.....	1.00 30 ml vial	2.44000	2.44
benzoin/.....	0.50 oz	1.16000	0.58
Bupivacaine 0.5%/Marcaine 0.5%.....	30.00 cc	0.05813	1.74
droperidol/.....	0.13 25 mg	1.90000	0.25
Lactated Ringers/.....	1000.00 cc	0.00089	0.89
Morphine/MSO4.....	4.00 mg	0.04660	0.19
Oxycodone/Percocet.....	1.00 tablet	0.50850	0.51
Sodium chloride irrig/saline.....	3000.00 cc	0.00124	3.72
Total Pharmaceuticals:			15.68

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Atracurium/Tracrium.....	5.00 mg	0.40180	2.01
ephedrine/.....	10.00 100 mg	1.00560	10.06
Fentanyl/Sublimaze.....	200.00 mcg	0.05740	11.48
Isoflurane/Forane.....	120.00 L	0.00860	1.03
Ketorolac Tromethamine/Toradol.....	60.00 mg	0.10325	6.20
Midazolam/Versed.....	2.00 mg	1.42200	2.84
Nitrous oxide gas/.....	180.00 L	0.00100	0.18
Oxygen gas/.....	240.00 L	0.00050	0.12
Propofol/Diprivan.....	300.00 mg	0.05940	17.82
Succinyl Choline/Anectine.....	120.00 cc	0.44000	52.80
Total Anesthetics:			104.53

3.2.5.4 Resource Requirements - Tonsillectomy with Adenoidectomy. Costs for CPT code 42821, Tonsillectomy with Adenoidectomy, are identified in Exhibit 3-16. Total direct costs are \$218.35, with most costs attributed to direct labor and disposable supplies. Because a general anesthetic is used, the patient requires a longer recovery period (135 minutes). The surgery requires the patient to be in the operating room for 45 minutes and there is a preoperative period of 45 minutes. The patient's total stay of 225 minutes is responsible for the relatively high direct labor costs required for this procedure.

Disposable supplies are the next highest component of cost, although much of the cost of supplies is attributed to the anesthesia mask required when general anesthesia is used. The mask accounts for more than half of all disposable supply costs. As is indicated by the profile, this procedure does not require high technology equipment. Traditional surgical techniques are used to perform the procedure and anesthesia costs are also limited.

3.2.5.5 Resource Requirements - Dilation and Curettage. Costs for CPT code 57820, Dilation and Curettage, are identified in Exhibit 3-17. Total direct costs are \$146.09, with direct labor costs accounting for more than half of total direct costs. Although the patient is only in the operating room for 15 minutes to complete the procedure, a general anesthetic is used which requires a more extensive recovery time (120 minutes). As in the case of tonsillectomy with adenoidectomy, this procedure does not require the use of new technologies. Anesthesia is the second highest cost component and no specialized supplies or pharmaceuticals are required. In contrast to other procedures discussed, there are no costly supply items required for the procedure.

3.2.5.6 Resource Requirements - Magnetic Resonance Imaging. The resource profile for CPT code 70551, Magnetic Resonance Imaging, is presented in Exhibit 3-18. Total direct costs for the procedure are \$311.18, with almost two-thirds of the cost attributed to the use of MRI equipment. This equipment has an average cost of \$1,850,000 including the cost of special construction of the room in which it is housed. The equipment was expected to be used 10,000 times before it is fully depreciated. Costs and use rates were provided by equipment manufacturers. The procedure, which assumes that a brain image is being completed, requires a technician's involvement for 60 minutes. The only other major cost is for a drug (Magnevist) required for the procedure.

3.2.5.7 Resource Requirements - Computerized Axial Tomography. The resource profile for CPT code 70470, Computerized Axial Tomography, is presented in Exhibit 3-19. The specific procedure that is identified for the profile is a scan of the head or brain without the use of contrast material and followed by the completion of additional sections using contrast material. The drug used for the contrast material, i.e., organically bound iodine/Isovue 300, is the most costly resource used in the procedure (\$134.82). The use of the CT scanner is the second highest cost resource. The CT scanner is priced in excess of \$900,000 including special construction requirements and has a depreciable life of 20,000 uses which means that each use has a cost of \$45.53. Cost and use rates were provided by manufacturers. Direct labor costs are low since the procedure only requires 20 minutes to complete. Film used to record images is the highest cost supply.

EXHIBIT 3-16

CPT 42821 Tonsillectomy with Adenoidectomy

Most common anesthesia used: General

Total Direct Cost: 218.35

Labor minutes by operating phase

	Test	Pre	Surg	Post	Cost/Minute	Total Cost
PATIENT.....	30	45	45	135		
Anesthesiologist.....	0	10	15	5	0.00000	0.00
Cert. Reg. Nurse Anest. (CRNA).....	0	5	45	5	0.00000	0.00
Physician.....	0	5	30	5	0.00000	0.00
Registered Nurse (RN).....	30	25	45	65	0.55000	91.02
Technician.....	0	0	45	0	0.31000	13.98

Total Direct Labor: 105.00

Movable Equipment

	Quantity	Price	# of Uses	Cost/Use	Total Cost
cautery machine.....	1	3500	5000	0.700000	0.70
light source.....	1	4500	5000	0.900000	0.90

Total Movable Equipment: 1.60

Disposable Supplies

	Quantity:Unit	Unit Cost	Total Cost
anesthesia circuit.....	1	4.66000	4.66
anesthesia mask.....	1	45.82300	45.82
Bovie pad.....	1	3.00000	3.00
catheter-red rubber.....	1	13.60000	13.60
EKG electrodes.....	1	0.22500	0.23
endotracheal tube.....	1	0.22500	0.23
gloves-non sterile.....	2 pair	0.34000	0.68
gloves-sterile.....	2 pair	0.43500	0.87
needle-20 gauge Jelco.....	1	0.03800	0.04
pack-basic.....	1	4.28050	4.28
Ray tec sponge 4x4.....	1 10/pkg	1.56000	1.56
skin temp monitor.....	1	1.25000	1.25
sponge-tonsil.....	1 5pkg	1.58000	1.58
suction catheter.....	1	0.25000	0.25
suction liner-1500cc.....	1	1.22000	1.22
tubing-IV.....	1	0.65000	0.65
tubing-IV extension.....	1	0.65000	0.65
tubing-suction.....	1	7.14000	7.14

Total Disposable Supplies: 87.70

Reusable Supplies

	Quantity:Unit	Unit Cost	# Uses	Total Cost
instrument set.....	1	395.60000	3000	0.13
suction jar.....	1	1.91000	100	0.02
towel clip.....	2	10.00000	100	0.20
towel pack.....	2 4/pk	10.00000	100	0.20

Total Reusable Supplies: 0.55

Pharmaceuticals: Generic/Brand Name

	Dosage:Unit	Unit Cost	Total Cost
/Neosynephrine.....	1.00 bottle	3.29000	3.29
/tigan.....	100.00 mg	0.14610	14.61
Acetaminophen/Tylenol.....	250.00 mg	0.00003	0.01
Lactated Ringers/.....	500.00 ml	0.00089	0.45

Total Pharmaceuticals: 18.35

Anesthetics: Generic/Brand Name

	Dosage:Unit	Unit Cost	Total Cost
Atropine/.....	0.30 15 ml bott	1.74000	0.52
Ketorolac Tromethamine/Toradol.....	30.00 mg	0.10325	3.10
Metoclopramide/Reglan.....	10.00 mg	0.01038	0.10
Morphine/MSO4.....	20.00 mg	0.04660	0.93
Nitrous oxide gas/.....	405.00 L	0.00100	0.41
Oxygen gas/.....	180.00 L	0.00050	0.09

Total Anesthetics: 5.15

EXHIBIT 3-17

CPT 57820 Dilatation and Curettage

Most common anesthesia used: General

Total Direct Cost: 146.09

Labor minutes by operating phase

	Test	Pre	Surge	Post	Cost/Minute	Total Cost
PATIENT.....	30	60	15	120		
Anesthesiologist.....	0	10	10	5	0.00000	0.00
Cert. Reg. Nurse Anest. (CRNA).....	0	5	15	5	0.00000	0.00
Physician.....	0	5	5	5	0.00000	0.00
Registered Nurse (RN).....	30	30	15	60	0.55000	74.47
Technician.....	0	0	15	0	0.31000	4.66

Total Direct Labor: 79.13

Movable Equipment

	Quantity	Price	# of Uses	Cost/Use	Total Cost
allen stirrups.....	2	1603	5000	0.320000	0.64

Total Movable Equipment: 0.64

Disposable Supplies

	Quantity:Unit	Unit Cost	Total Cost
EKG electrodes.....	3	0.22500	0.68
gloves-non sterile.....	4 pair	0.34000	1.36
gloves-surgical sterile.....	3 pair	0.76000	2.28
gown-surgical sterile.....	1	10.66100	10.66
needle-18 gauge Jelco IV.....	1	0.03800	0.04
needle-22 gauge 1".....	1	0.03800	0.04
Peri-gyn pack.....	1	6.99580	7.00
Peri-pad.....	1	0.59710	0.60
Ray tec sponge 4x4.....	1 10/pkg	1.56000	1.56
sanitary belt.....	1	0.51050	0.51
syringe-20cc.....	1	0.20700	0.21
syringe-20cc.....	1	0.20700	0.21
Telfa.....	1	0.13000	0.13
tubing-anesthesia w/ mask.....	1	0.97000	0.97
tubing-IV.....	1	0.65000	0.65

Total Disposable Supplies: 26.87

Reusable Supplies

	Quantity:Unit	Unit Cost	# Uses	Total Cost
basin set.....	1	20.00000	500	0.04
D&C instrument set.....	1	120.00000	2000	0.06
needle extender.....	1	3.05000	100	0.03
speculum-graves.....	1	27.48000	100	0.27
towel pack.....	2 4/pk	10.00000	100	0.20

Total Reusable Supplies: 0.60

Pharmaceuticals: Generic/Brand Name

	Dosage:Unit	Unit Cost	Total Cost
/Betadine solution.....	4.00 oz	0.77250	3.09
ibuprophen/motrin.....	800.00 mg	0.00005	0.04
Lactated Ringers/.....	1000.00 cc	0.00089	0.89
Normal Saline/.....	500.00 cc	0.00124	0.62

Total Pharmaceuticals: 4.64

Anesthetics: Generic/Brand Name

	Dosage:Unit	Unit Cost	Total Cost
Bupivacaine 0.5%w/epi/Marcaine 0.5%w/epi.....	30.00 cc	0.18000	5.40
Droperidol/Inapsine.....	0.25 cc	0.23000	0.06
Fentanyl/Sublimaze.....	30.00 mcg	0.05740	1.72
Ketorolac Tromethamine/Toradol.....	60.00 mg	0.10325	6.20
Metoclopramide/Reglan.....	10.00 mg	0.01038	0.10
Midazolam/Versed.....	2.00 mg	1.42200	2.84
Nitrous oxide gas/.....	30.00 liter	0.00100	0.03
Oxygen gas/.....	60.00 L	0.00050	0.03
Propofol/Diprivan.....	300.00 mg	0.05940	17.82

Total Anesthetics: 34.20

EXHIBIT 3-18

Procedure: Magnetic resonance (eg, proton) imaging, brain (including brain stem)

CPT: 70551

ICD:

APG: 348

Labor minutes by operating phase	Prel	Pre2	OR	Pst1	Pst2	Cost/Minute	Total Cost
Radiologist.....	0	0	0	0	0	0.00000	0.00
Radiology Technician.....	0	0	0	0	0	0.42000	0.00
Radiology Technologist.....	10	60	0	0	0	0.42000	38.56

Total Direct Labor: 38.55

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
gloves.....	2 pair	0.34000	0.68

Total Disposable Supplies: 0.68

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
gown-patient.....	1	10.00000	100	0.10

Total Reusable Supplies: 0.10

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
MRI equipment.....	1	1850000	10000	185.000000	185.00

Total Movable Equipment: 185.00

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
/Magnevist.....	15.00 ml	5.79000	86.85

Total Pharmaceuticals: 86.85

Total Direct Cost: 311.18 Indirect Labor Cost: 21.74

Total Indirect Cost: 121.36 Indirect Equipment Cost: 45.60

Overhead: 54.02

Total Cost of Procedure: 432.55

EXHIBIT 3-19

Procedure: Computerized axial tomography; head or brain without contrast material, followed by contrast material(s) and
CPT: 70470 further sections

ICD:

APG: 349

Labor minutes by operating phase	Prel	Pre2	OR	Pst1	Pst2	Cost/Minute	Total Cost
Radiologist.....	0	0	0	0	0	0.00000	0.00
Radiology Technologist.....	10	20	0	0	0	0.42000	16.91

Total Direct Labor: 16.90

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
adapter.....	1	0.00000	0.00
alcohol swab.....	1	0.20000	0.20
angiocath.....	1	0.71000	0.71
cannula-interlink.....	1	1.91000	1.91
film.....	6	2.36000	14.16
gauze 2x2 sterile.....	2	0.35000	0.70
head cover.....	1	0.10000	0.10
syringe-lcc.....	1	0.07000	0.07
tape-1" paper.....	1 roll	0.71000	0.71

Total Disposable Supplies: 18.56

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
restraints.....	2	8.79000	100	0.18
tourniquet.....	1	18.95000	100	0.19

Total Reusable Supplies: 0.36

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
CT scanner.....	1	910651	20000	45.532650	45.53
sponge-support.....	1	605	500	1.210000	1.21

Total Movable Equipment: 46.74

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Organically bound iodine/Isovue 300.....	150.00 ml	0.89880	134.82

Total Pharmaceuticals: 134.82

Total Direct Cost: 217.39 — Indirect Labor Cost: 0.00

Total Indirect Cost: 15.20 — Indirect Equipment Cost: 15.20

Overhead: 0.00

Total Cost of Procedure: 232.59

3.2.5.8 Resource Requirements - Plain Film Chest Radiologic Examination. The resource profile for CPT code 71010, Plain Film Chest Radiologic Examination (chest x-ray), is presented in Exhibit 3-20. The procedure is a low cost activity with a total direct cost of only \$23.93. The highest cost is incurred for the use of the x-ray equipment required for the procedure. The equipment has a cost of \$90,000 and is estimated to have a life of 10,000 uses which yield a cost of \$9.00 per use. Approximately 60 percent of costs are attributed to the cost of equipment and most remaining costs are for supplies. The procedure is estimated to require only three minutes, which leads to minimal direct labor costs.

3.3 UNIT COSTS OF DIRECT RESOURCES

Direct costs are the product of resources used and the cost of each resource. In this section, unit costs of direct resources are examined and their impact on the calculation of resource costs is discussed. In addition, the presentation of direct costs is concluded by analyzing the effect of volume on direct costs.

The large number of resources used for ambulatory services makes it difficult to examine the unit cost of each resource in detail. Instead, only two resources that have significant impact on costs are included in this analysis. These resources are:

- Nursing salaries
- Intraocular lenses

Data are available in the study's database to examine unit costs of other direct resources with some exceptions. Most notably, standard replacement costs for equipment are included in the database rather than the actual equipment costs incurred by each provider studied. Actual equipment costs were found to be misleading because of variations in purchase price based on time of purchase and differences in depreciation policies. Data on actual equipment costs were collected from most providers, however, and are available in the study's files although they are not included in the resource profile database.

3.3.1 Nursing Salaries

Nursing salary data are summarized in Exhibit 3-21. The exhibit identifies differences in salary by region and by provider type. In order to make the comparison meaningful, only surgical nurse salaries are included in the exhibit. Salary data collected from participating providers were adjusted to reflect differences in wage indices. The Department of Labor Wage Index for Urban and Non-urban Areas was used for adjustments. The unadjusted weighted average mean salary for all nurses is \$35,070 (for 1992). The adjusted mean salary for nurses in hospitals was \$35,902, while the adjusted average salary for nurses in ASCs was \$35,657. For hospitals, salaries were statistically higher in the South and Midwest; for ASCs salaries in the South were higher than salaries in the Northeast and Midwest. Overall, there was no statistical difference between nurse salaries when examined by provider type; there was only one region

EXHIBIT 3-20

Procedure: Radiologic examination, chest; single view, frontal

CPT: 71010

ICD:

APG: 351

Labor minutes by operating phase	Prel	Pre2	OR	Pat1	Pat2	Cost/Minute	Total Cost
Radiology Technologist.....	1	3	0	0	0	0.44000	2.12

Total Direct Labor: 2.11

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
disinfectant solution.....	1	1.50000	1.50
film-chest.....	1	1.00000	1.00
gloves.....	2 pair	0.34000	0.68

Total Disposable Supplies: 3.18

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
cassette-chest.....	1	870.00000	500	1.74
gonad shield.....	1	404.00000	500	0.81
marker-lead.....	1	4.12500	10	0.41
view box.....	1	1347.00000	1000	1.35

Total Reusable Supplies: 4.30

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
film processor.....	1	6607	5000	1.321400	1.32
grid.....	1	597	500	1.194000	1.19
pigg-o-stat.....	1	804	500	1.608000	1.61
sponge-support.....	1	605	500	1.210000	1.21
x-ray machine.....	1	90000	10000	9.000000	9.00

Total Movable Equipment: 14.33

Total Direct Cost: 23.93 Indirect Labor Cost: 0.39

Total Indirect Cost: 8.04 Indirect Equipment Cost: 2.28

Overhead: 5.38

Total Cost of Procedure: 31.98

**COMPARISON OF RN SALARIES BY REGION AND PROVIDER TYPE
(ADJUSTED FOR GEOGRAPHIC WAGE VARIATION)**

REGION	SAMPLE SIZE		MEAN SALARY		MEDIAN SALARY		STANDARD DEVIATION		STATISTICAL TESTING ACROSS PROVIDER TYPE, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS REGION, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN SALARY	HIGHER ASC MEAN SALARY	NO SIGNIFICANT DIFFERENCE	(HOSPITALS ACROSS REGION; ASCs ACROSS REGION)
Northeast	9	2	\$35,360	\$30,826	\$33,812	\$30,826	\$4,921	\$4,313			✓	For hospitals, salaries in the South and Midwest have higher means than salaries in the West.
Midwest	6	5	\$37,458	\$32,437	\$37,846	\$34,088	\$3,279	\$5,488	✓			
South	9	16	\$38,608	\$37,352	\$38,432	\$37,147	\$4,682	\$3,578			✓	For ASCs, salaries in the South are higher than salaries in the Northeast and Midwest.
West	10	10	\$33,021	\$35,523	\$32,561	\$33,823	\$3,801	\$4,329			✓	
Total	34	33	\$35,902	\$35,657	\$34,212	\$36,543	\$4,668	\$4,487			✓	

Source: CHPS Outpatient Resource Costing Data Base for salary data; U.S. Bureau of Labor Statistics for wage adjustments by region.

where there was a significant difference. In the Midwest, hospitals have statistically higher nurse salaries than do ASCs.

Only salary data are compared in Exhibit 3-21. Although fringe benefits were also found to not vary substantially between hospitals and ASCs, hospitals used a greater number of full-time staff which resulted in greater aggregate fringe benefits since ASCs more frequently used part-time staff who were less likely to receive full fringe benefits. The similarity of salary rates among providers within regions implies that ASCs and hospitals compete for the same staff and pay comparable rates for them.

3.3.2 Intraocular Lenses

The high volume of cataract surgery performed on Medicare beneficiaries has led to substantial and long-standing interest in the cost of intraocular lenses. In this study, lens costs were studied at two levels. First, differences in the average cost of lenses across facilities were studied and second, differences in prices paid for lenses within facilities were examined.

Exhibit 3-22 identifies the range, median and mean costs of intraocular lenses for the facilities studied. Data were gathered from the purchasing records of each facility. The median cost for each facility was used in the analysis. The mean value for all facilities presented in Exhibit 3-22 is not weighted for volume differences among facilities.

Most facilities included in the study performed eye surgery and each of these facilities performed lens replacement procedures. The costs of lenses used ranged from \$80 to \$722. Across all facilities, the mode for the purchase of lenses was \$150.00 and the mean was 164.70. Nearly all facilities had purchased lenses at least once during 1992 for \$150.00. Differences in costs are due in part to volume of lenses used. Volume, however, did not explain many instances in which high costs were identified for lens purchases. For several years, supply distributors packaged lenses with other supplies to make the costs more attractive although difficult to determine. Most recently, such packaged arrangements have become less common and costs identified for lenses are far more likely to represent actual costs. Discussions with surgeons indicate that differences in costs of lenses are frequently associated with differences in quality. Most agree, however, that lower cost lenses are of sufficient quality to be used for most patients. It is, therefore, difficult to fully understand causes of differences in lens cost.

Each facility studied recorded a range of costs for lenses that were purchased. In most facilities, the range was within 40 percent of the mean cost for the facility. In hospitals where the mean cost was close to \$150, several instances in which purchases were made for \$175 to \$200 were noted. In facilities where mean costs were higher, the range was greater on both an absolute and percentage basis. The range in one facility was from \$240 to \$722. Differences in purchase costs appear to be based on volumes ordered and the timing of the order.

It was expected that group purchasing contracts would result in greater uniformity in lens costs for hospitals and lower costs for hospitals than ASCs. Neither of these expectations were

DISTRIBUTION OF INTRAOCULAR LENS COSTS

LOW VALUE	PERCENTILE			HIGH VALUE	MEAN
	25TH	50TH	75TH		
80.00	104.00	150.00	183.00	722.00	164.70

met. Hospitals had as broad a range in lens costs as ASCs and hospitals' costs were not lower than ASCs' costs.

3.3.3 Effect of Volume on Direct Cost

The effect of procedure volume on direct cost was studied only for ambulatory surgery. The analysis divided facilities into three volume categories that were determined by the distributional parameters for the facilities. The definitions of the volume categories were based on the 33 and 67 percentile values for the respective facility types. The volume categories for hospitals are:

- Low volume facilities (1,000 to 4,985 procedures performed annually)
- Mid-volume facilities (4,986 to 13,828 procedures performed annually)
- High volume facilities (more than 13,828 procedures performed annually)

The volume categories for ASCs are:

- Low volume facilities (1,000 to 3,667 procedures performed annually)
- Mid-volume facilities (3,668 to 5,956 procedures performed annually)
- High volume facilities (more than 5,956 procedures performed annually)

The smallest facilities, those with less than 1,000 procedures per annum were excluded from this study in order to ensure that the cost data incorporated all the efficiencies that result from relative proficiency and experience in the performance of the procedures studied. It is recognized that this arbitrary cutoff is relatively more exclusive for ASCs than for hospitals; it is likely that ASC costs would be higher if the smaller facilities were included. Future studies could incorporate these facilities by basing the volume categories on the total distributions of procedures for hospitals and ASCs. This would ensure that the same percentiles of procedure activity for hospitals and ASCs were classified in the same category. However, for the purpose of this study, it is reasonable to assume that the cost structures of the very small facilities will differ significantly from the relatively high volume facilities analyzed here and that any differences between volume levels identified would only be enhanced by the inclusion of the very small facilities.

Costs for each component of direct cost were then examined for each category of facility. It would also be possible to examine the impact of volume based on individual procedure volumes rather than total facility volume, but such an approach is flawed. If a facility performs a small number of procedures often, it may still not have a great enough total volume to generate efficiencies in the purchase or use of supplies, pharmaceuticals or anesthesia. If the facility is not heavily used, lower operating room times generated by familiarity with a specific procedure may be offset by the lack of an overall need to work quickly. On the other hand, a facility that has a high total volume is often pressured to complete all procedures quickly although familiarity with

a specific procedure may be limited. Although either approach to analysis seems appropriate, the identification of the effects of volume based on total facility activity is most useful.

Assumptions that were made regarding volume must be made clear in order to fully understand the analysis that is described. First, only time required of nurses and technicians for specific procedures is identified in resource profiles. Costs used for wage rates, however, reflect 1,180 hours annually devoted to patient contact time, 100 hours annually devoted to vacation and other leave and 800 hours annually devoted to time not requiring patient contact, including idle time. These standards are intended for facilities in which each operating room is used for approximately 1,040 hours annually. If a provider conducted a low volume of surgery and staff were idle for more extended periods, the additional costs of idle time are not included in the costs identified for study. If the surgical volume was higher than implied by these standards, reduced costs per minute for personnel time are not reflected in the study's data. As a result, personnel time has been normalized. It should be understood that if low volume facilities experienced substantial additional idle time, it is assumed that they would be open fewer hours and pay salaries only for needed nursing and technician time. Observations of low volume facilities indicated that such approaches were in use. Because direct labor represents only 24 percent of total ambulatory surgery costs, changes in this standard would have a minimal impact on total procedure costs for most procedures. For example, if patient time were increased to 1400 hours, total procedure costs would decline by less than three percent.

A second set of assumptions was made in regard to direct equipment and reusable supplies, which reduce the effects of volume on this cost component. It was assumed that each facility would use equipment and reusable supplies at the same rate. High volume facilities, therefore, might actually use equipment so that it needed replacement while low volume facilities might never achieve the volume levels required to fully depreciate equipment. Direct equipment and reusable supply costs associated with low volume facilities, therefore, might be higher than identified in this study. It is expected, however, that even low volume facilities will use most high cost equipment until its useful life is completed, although more time may be required to reach this point.

The assumptions regarding volume that have been made reduce the effect of volume differences on cost, although there is no reason to expect that the assumptions change the expectation that high volume facilities should have lower direct costs than low volume facilities. The magnitude of differences, rather than their direction, is affected by the assumptions.

Exhibits 3-23A through 3-29K present data on the effects of volume on the ten surgical procedures that account for the highest proportion of surgical volume for the Medicare program and for all surgical procedures studied. Comparable data for each procedure studied are presented in Appendix J. Data are presented separately for hospitals and ASCs. The analysis reveals little consistent relationship between volume and direct cost. It was expected that higher volume facilities would have lower direct costs; however, high volume and mid volume hospitals had higher costs than did low volume hospitals and there was no statistical difference between direct costs for ASCs based on volume for the group of ten procedures examined. Direct labor costs, which depend on operating room time, were expected to be lower for facilities where

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 66984

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	9	11	188.10	92.14	✓			No difference in means across hospital volume categories.
MID-VOLUME	10	6	168.08	139.62			✓	Mid-volume ASCs have higher mean than low volume ASCs, but
HIGH VOLUME	3	6	223.25	127.20	✓			neither mean differs significantly from that of high volume ASCs.
DIRECT SUPPLIES COST								
LOW VOLUME	9	11	324.34	281.65			✓	High volume hospitals have higher mean than low and mid-volume
MID-VOLUME	10	6	317.07	295.95			✓	hospitals, whose means do not differ from each other.
HIGH VOLUME	3	6	492.87	372.08			✓	No difference in means across ASC volume categories.
DIRECT EQUIPMENT COST								
LOW VOLUME	9	11	8.55	9.19			✓	No difference in means across hospital volume categories.
MID-VOLUME	10	6	7.22	8.45			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	7.60	10.39			✓	
PHARMACEUTICALS COST								
LOW VOLUME	9	11	71.87	109.76		✓		No difference in means across hospital volume categories.
MID-VOLUME	10	6	87.73	102.78			✓	No difference in means across ASC volume categories
HIGH VOLUME	3	6	96.62	78.02			✓	
ANESTHESIA COST								
LOW VOLUME	9	11	24.60	16.77			✓	No difference in means across hospital volume categories
MID-VOLUME	10	6	20.18	14.95			✓	No difference in means across ASC volume categories
HIGH VOLUME	3	6	31.17	19.21			✓	
TOTAL DIRECT COST								
LOW VOLUME	9	11	617.46	509.50			✓	High volume hospitals have higher mean than low and mid-volume
MID-VOLUME	10	6	600.29	561.75			✓	hospitals, whose means do not differ from each other.
HIGH VOLUME	3	6	651.51	606.89			✓	No difference in means across ASC volume categories

Note: Description of CPT code 66984: Extracapsular cataract removal with insertion of Intraocular lens.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45378

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	19	5	85.17	74.42			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	95.59	111.37			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	61.61	97.58			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	19	5	59.32	56.84			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	51.39	50.30			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	65.99	54.72			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	19	5	11.34	8.28	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	3	12.71	11.62			✓	High volume ASCs have higher mean than low volume ASCs, but
HIGH VOLUME	2	5	10.90	14.64			✓	neither mean differs significantly from that of mid-volume ASCs.
PHARMACEUTICALS COST								
LOW VOLUME	19	5	19.41	15.50			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	14.98	8.93			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	5.77	3.85			✓	
ANESTHESIA COST								
LOW VOLUME	19	5	14.64	8.04			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	8.05	14.45			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	9.55	12.73			✓	
TOTAL DIRECT COST								
LOW VOLUME	19	5	189.87	163.08			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	182.72	196.67			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	153.82	183.51			✓	

Note: Description of CPT code 45378: Colonoscopy, diagnostic.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45385

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	17	6	90.51	88.71			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	99.62	126.91		✓		No difference in means across ASC volume categories.
HIGH VOLUME	2	5	65.77	94.81			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	17	6	73.15	63.53			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	70.11	67.17			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	71.75	71.39			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	17	6	10.91	9.59			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	11.97	11.83			✓	High volume ASCs have higher mean than low volume ASCs, but neither mean differs significantly from that of mid-volume ASCs.
HIGH VOLUME	2	5	10.90	15.49			✓	
PHARMACEUTICALS COST								
LOW VOLUME	17	6	22.36	16.68			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	17.58	22.30			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	3.67	9.16			✓	
ANESTHESIA COST								
LOW VOLUME	17	6	16.48	15.95			✓	High volume hospitals have higher mean than mid-volume hospitals, but neither mean differs significantly from that of low volume hospitals
MID-VOLUME	6	4	8.74	25.37			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	30.48	10.11			✓	
TOTAL DIRECT COST								
LOW VOLUME	17	6	213.41	194.47			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	208.02	253.58			✓	Mid-volume ASCs have higher mean than low volume ASCs, but neither mean differs significantly from that of high volume ASCs.
HIGH VOLUME	2	5	182.56	200.97			✓	

Note: Description of CPT code 45385: Colonoscopy, for removal of polypoid lesion.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 49505

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	10	8	162.58	143.80			✓	No difference in means across hospital volume categories.
MID-VOLUME	14	7	139.58	176.93		✓		Mid-volume ASCs have higher mean than high volume ASCs, but
HIGH VOLUME	3	5	126.08	136.98			✓	neither mean differs significantly from that of low volume ASCs.
DIRECT SUPPLIES COST								
LOW VOLUME	10	8	99.26	118.46		✓		No difference in means across hospital volume categories.
MID-VOLUME	14	7	94.76	89.99			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	5	115.21	128.03			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	10	8	1.06	0.75			✓	No difference in means across hospital volume categories.
MID-VOLUME	14	7	0.96	1.38			✓	Mid-volume ASCs have higher mean than low volume ASCs, but
HIGH VOLUME	3	5	0.67	0.84		✓		neither mean differs significantly from that of high volume ASCs.
PHARMACEUTICALS COST								
LOW VOLUME	10	8	9.77	12.75			✓	No difference in means across hospital volume categories.
MID-VOLUME	14	7	9.51	12.39			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	5	10.22	9.54			✓	
ANESTHESIA COST								
LOW VOLUME	10	8	76.23	73.38			✓	High volume hospitals have higher mean than mid-volume hospitals,
MID-VOLUME	14	7	63.99	65.52			✓	but neither mean differs significantly from that of low volume hospitals
HIGH VOLUME	3	5	108.97	67.42	✓			No difference in means across ASC volume categories
TOTAL DIRECT COST								
LOW VOLUME	10	8	348.89	349.15			✓	Low and high volume hospitals have higher means than mid-volume
MID-VOLUME	14	7	308.79	346.21			✓	hospitals, but their means do not differ significantly from each other.
HIGH VOLUME	3	5	361.16	342.80			✓	No difference in means across ASC volume categories

Note: Description of CPT code 49505: Repair of inguinal hernia, age 5 or over.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 43239

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	19	6	79.43	72.51			✓	Mid-volume hospitals have higher mean than low and high volume hospitals, whose means do not differ from each other. No difference in means across ASC volume categories.
MID-VOLUME	6	2	114.45	110.47			✓	
HIGH VOLUME	2	5	56.89	87.34			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	19	6	75.03	67.00			✓	No difference in means across hospital volume categories. No difference in means across ASC volume categories.
MID-VOLUME	6	2	89.74	53.82			✓	
HIGH VOLUME	2	5	62.11	96.60			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	19	6	10.26	8.31	✓			High volume hospitals have higher mean than low volume hospitals, but neither mean differs significantly from that of mid-volume hospitals. High volume ASCs have higher mean than low volume ASCs, but neither mean differs significantly from that of mid-volume ASCs.
MID-VOLUME	6	2	11.85	10.93			✓	
HIGH VOLUME	2	5	15.29	12.56			✓	
PHARMACEUTICALS COST								
LOW VOLUME	19	6	28.41	18.54			✓	No difference in means across hospital volume categories. Low volume ASCs have higher mean than mid-volume ASCs, but neither mean differs significantly from that of high volume ASCs.
MID-VOLUME	6	2	22.06	2.87	✓			
HIGH VOLUME	2	5	20.02	11.07			✓	
ANESTHESIA COST								
LOW VOLUME	19	6	14.78	21.90			✓	No difference in means across hospital volume categories No difference in means across ASC volume categories
MID-VOLUME	6	2	12.14	5.97			✓	
HIGH VOLUME	2	5	18.84	20.86			✓	
TOTAL DIRECT COST								
LOW VOLUME	19	6	207.91	188.27			✓	Mid-volume hospitals have higher mean than low and high volume hospitals, whose means do not differ from each other. No difference in means across ASC volume categories
MID-VOLUME	6	2	250.24	184.05			✓	
HIGH VOLUME	2	5	173.15	228.42			✓	

Note: Description of CPT code 43239: Upper GI endoscopy, for biopsy or collection of specimen

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 43235

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	17	5	80.25	73.87			✓	Low and mid-volume hospitals have higher means than high volume hospitals, but their means do not differ significantly from each other. No difference in means across ASC volume categories.
MID-VOLUME	5	3	87.09	106.63			✓	
HIGH VOLUME	2	4	55.03	94.82			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	17	5	73.28	63.87			✓	No difference in means across hospital volume categories.
MID-VOLUME	5	3	86.55	74.67			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	4	73.26	74.34			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	17	5	10.34	7.75	✓			No difference in means across hospital volume categories.
MID-VOLUME	5	3	11.80	10.99			✓	High volume ASCs have higher mean than low volume ASCs, but neither mean differs significantly from that of mid-volume ASCs.
HIGH VOLUME	2	4	8.74	12.73			✓	
PHARMACEUTICALS COST								
LOW VOLUME	17	5	18.20	14.18			✓	No difference in means across hospital volume categories.
MID-VOLUME	5	3	19.08	7.85			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	4	9.81	18.46			✓	
ANESTHESIA COST								
LOW VOLUME	17	5	12.56	23.04		✓		No difference in means across hospital volume categories.
MID-VOLUME	5	3	6.51	12.10			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	4	16.50	22.23			✓	
TOTAL DIRECT COST								
LOW VOLUME	17	5	194.63	182.70			✓	Mid-volume hospitals have higher mean than high volume hospitals, but neither mean differs significantly from that of low volume hospitals. No difference in means across ASC volume categories.
MID-VOLUME	5	3	211.04	212.23			✓	
HIGH VOLUME	2	4	163.33	222.57			✓	

Note. Description of CPT code 43235: Upper GI endoscopy, diagnostic.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 19120

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	12	10	135.02	105.70	✓			No difference in means across hospital volume categories.
MID-VOLUME	16	7	138.68	136.70			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	127.26	123.43			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	12	10	82.01	88.72			✓	No difference in means across hospital volume categories.
MID-VOLUME	16	7	90.82	84.99			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	96.11	95.14			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	12	10	1.28	0.89	✓			No difference in means across hospital volume categories.
MID-VOLUME	16	7	1.47	1.50			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	1.63	1.67			✓	
PHARMACEUTICALS COST								
LOW VOLUME	12	10	8.66	8.40			✓	No difference in means across hospital volume categories.
MID-VOLUME	16	7	9.38	7.06			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	8.44	5.74			✓	
ANESTHESIA COST								
LOW VOLUME	12	10	34.42	44.30			✓	No difference in means across hospital volume categories.
MID-VOLUME	16	7	43.17	41.90			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	48.94	49.68			✓	
TOTAL DIRECT COST								
LOW VOLUME	12	10	261.39	248.00			✓	No difference in means across hospital volume categories.
MID-VOLUME	16	7	283.52	272.15			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	282.37	275.66			✓	

Note: Description of CPT code 19120: Excision of cyst

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 52000

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	9	5	149.23	81.22	✓			Low volume hospitals have higher mean than mid-volume hospitals, but neither mean differs significantly from that of high volume hospitals.
MID-VOLUME	15	4	114.14	125.00			✓	Mid-volume ASCs have higher mean than low volume ASCs, but neither mean differs significantly from that of high volume ASCs.
HIGH VOLUME	2	5	108.50	112.44			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	9	5	67.79	76.75			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	67.02	74.95			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	67.81	81.90			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	9	5	7.19	6.38			✓	Mid-volume hospitals have higher mean than low volume hospitals, but neither mean differs significantly from that of high volume hospitals.
MID-VOLUME	15	4	8.44	8.30			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	7.62	8.12			✓	
PHARMACEUTICALS COST								
LOW VOLUME	9	5	6.28	7.37			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	7.29	11.49			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	0.89	15.57			✓	
ANESTHESIA COST								
LOW VOLUME	9	5	42.98	59.68			✓	No difference in means across hospital volume categories
MID-VOLUME	15	4	57.37	63.88			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	81.52	41.13			✓	
TOTAL DIRECT COST								
LOW VOLUME	9	5	273.46	231.40			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	254.26	283.62			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	266.33	259.16			✓	

Note: Description of CPT code 52000: Cystourethroscopy (separate procedure).

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45380

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	19	5	96.28	93.90			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	98.10	127.90		✓		No difference in means across ASC volume categories.
HIGH VOLUME	2	6	73.54	96.17			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	19	5	70.09	81.82			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	64.25	65.49			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	65.08	78.35			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	19	5	12.15	8.97	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	3	12.83	10.80			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	11.64	12.49			✓	
PHARMACEUTICALS COST								
LOW VOLUME	19	5	21.68	18.28			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	17.63	15.34			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	3.67	14.49			✓	
ANESTHESIA COST								
LOW VOLUME	19	5	15.53	13.00			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	11.07	27.64			✓	Mid-volume ASCs have higher mean than high volume ASCs, but
HIGH VOLUME	2	6	11.72	8.64			✓	neither mean differs significantly from that of low volume ASCs
TOTAL DIRECT COST								
LOW VOLUME	19	5	215.75	215.96			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	203.87	247.18			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	165.64	210.14			✓	

Note: Description of CPT code 45380: Colonoscopy, for biopsy.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 66821

DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	4	6	149.58	39.45	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	1	143.63	122.56			✓	High volume ASCs have higher mean than low volume ASCs, but
HIGH VOLUME	2	5	168.34	112.23			✓	neither mean differs significantly from that of mid-volume ASCs.
DIRECT SUPPLIES COST								
LOW VOLUME	4	6	186.54	62.58	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	1	211.42	67.47			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	242.78	76.84	✓			
DIRECT EQUIPMENT COST								
LOW VOLUME	4	6	6.47	8.68			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	1	7.90	12.07			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	9.30	6.85			✓	
PHARMACEUTICALS COST								
LOW VOLUME	4	6	74.83	50.88			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	1	66.61	56.90			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	71.93	65.55			✓	
ANESTHESIA COST								
LOW VOLUME	4	6	27.40	8.27	✓			No difference in means across hospital volume categories
MID-VOLUME	6	1	16.26	13.53			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	20.03	11.18			✓	
TOTAL DIRECT COST								
LOW VOLUME	4	6	444.82	169.85	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	1	445.83	272.53			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	512.38	272.65	✓			

Note. Description of CPT code 66821: Dissection of secondary membranous cataract.

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES:
SUM OF 10 HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

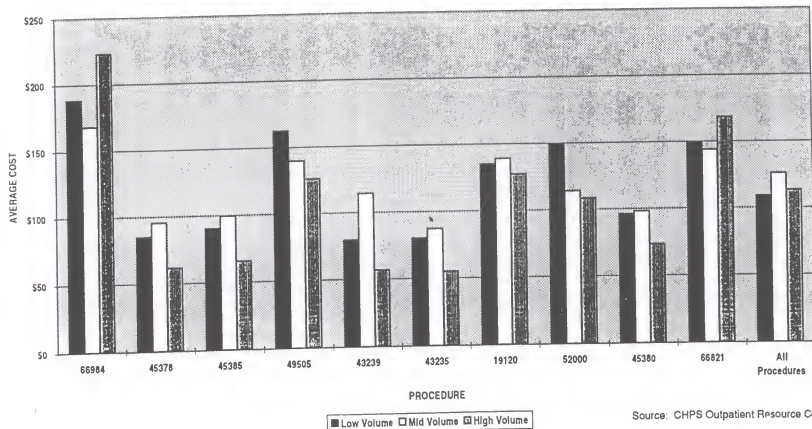
DIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
DIRECT LABOR COST								
LOW VOLUME	135	67	109.19	90.18	✓			Mid-volume hospitals have higher mean than low volume hospitals, but neither mean differs significantly from that of high volume hospitals.
MID-VOLUME	90	40	125.66	135.55			✓	Mid-volume ASCs have higher mean than low and high volume ASCs; high volume ASCs have higher mean than low volume ASCs.
HIGH VOLUME	23	52	113.44	108.98			✓	
DIRECT SUPPLIES COST								
LOW VOLUME	135	67	93.52	111.76			✓	Mid- and high volume hospitals have higher means than low volume hospitals, but their means do not differ significantly from each other.
MID-VOLUME	90	40	114.55	107.89			✓	No difference in means across ASC volume categories.
HIGH VOLUME	23	52	148.27	117.66			✓	
DIRECT EQUIPMENT COST								
LOW VOLUME	135	67	8.86	6.45	✓			Low volume hospitals have higher mean than mid-volume hospitals, but neither mean differs significantly from that of high volume hospitals.
MID-VOLUME	90	40	7.09	7.14			✓	High volume ASCs have higher mean than low and mid-volume ASCs, whose means do not differ from each other.
HIGH VOLUME	23	52	7.76	9.44			✓	
PHARMACEUTICALS COST								
LOW VOLUME	135	67	23.81	32.64			✓	No difference in means across hospital volume categories.
MID-VOLUME	90	40	24.43	26.17			✓	No difference in means across ASC volume categories.
HIGH VOLUME	23	52	25.10	23.79			✓	
ANESTHESIA COST								
LOW VOLUME	135	67	24.01	30.00			✓	Mid- and high volume hospitals have higher means than low volume hospitals, but their means do not differ significantly from each other.
MID-VOLUME	90	40	33.54	34.67			✓	No difference in means across ASC volume categories.
HIGH VOLUME	23	52	41.07	26.37	✓			
TOTAL DIRECT COST								
LOW VOLUME	135	67	259.38	271.03			✓	Mid- and high volume hospitals have higher means than low volume hospitals, but their means do not differ significantly from each other.
MID-VOLUME	90	40	305.28	311.42			✓	No difference in means across ASC volume categories.
HIGH VOLUME	23	52	335.63	286.23			✓	

Note: The 10 procedures included in this table are CPT codes 66984, 45378, 45385, 49505, 43239, 43235, 19120, 52000, 45380, and 66821.

Source: CHPS Outpatient Resource Costing Data Base

DIRECT LABOR COSTS BY VOLUME CATEGORY AND PROCEDURE, HOSPITALS

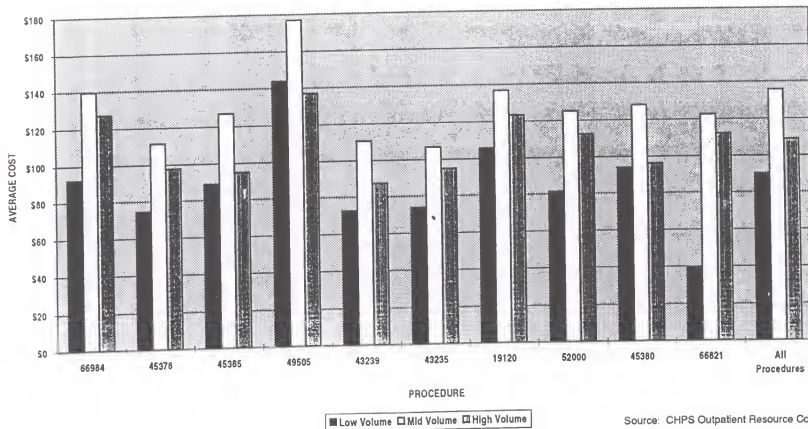
EXHIBIT 3-24A



Source: CHPS Outpatient Resource Costing Data Base

DIRECT LABOR COSTS BY VOLUME CATEGORY AND PROCEDURE, AMBULATORY SURGERY CENTERS

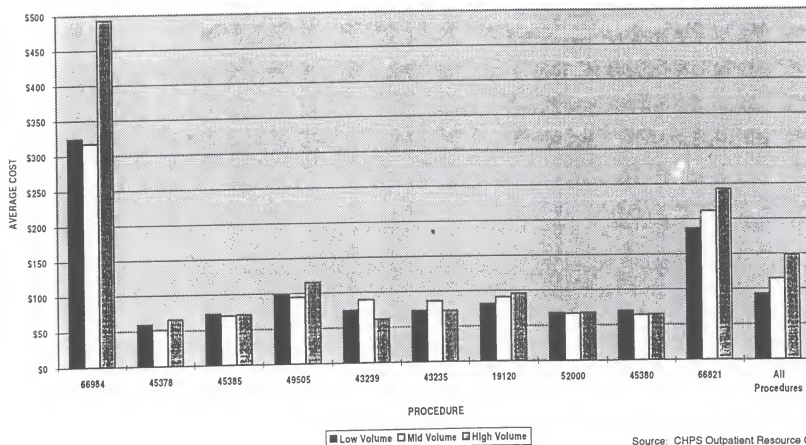
EXHIBIT 3-24B



Source: CHPS Outpatient Resource Costing Data Base

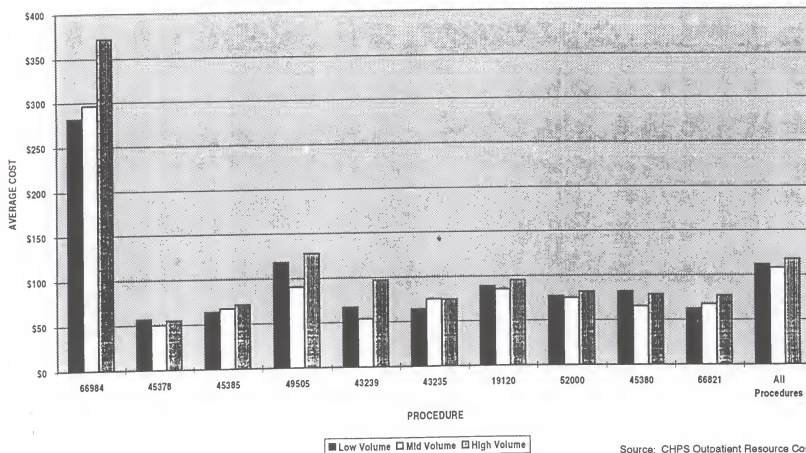
SUPPLY COSTS BY VOLUME CATEGORY AND PROCEDURE, HOSPITALS

EXHIBIT 3-25A



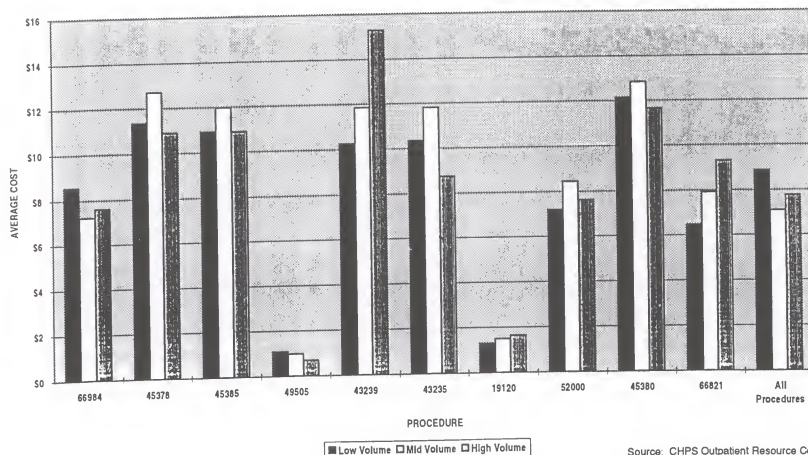
SUPPLY COSTS BY VOLUME CATEGORY AND PROCEDURE, AMBULATORY SURGERY CENTERS

EXHIBIT 3-25B



DIRECT EQUIPMENT COSTS BY VOLUME CATEGORY AND PROCEDURE, HOSPITALS

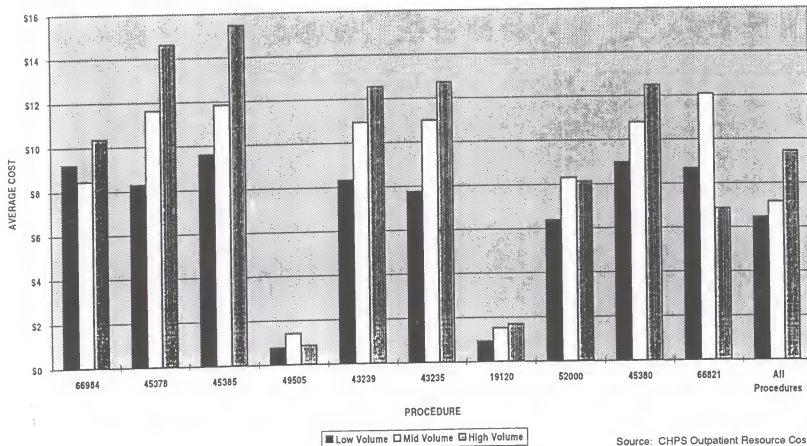
EXHIBIT 3-26A



Source: CHPS Outpatient Resource Costing Data Base

DIRECT EQUIPMENT COSTS BY VOLUME CATEGORY AND PROCEDURE, AMBULATORY SURGERY CENTERS

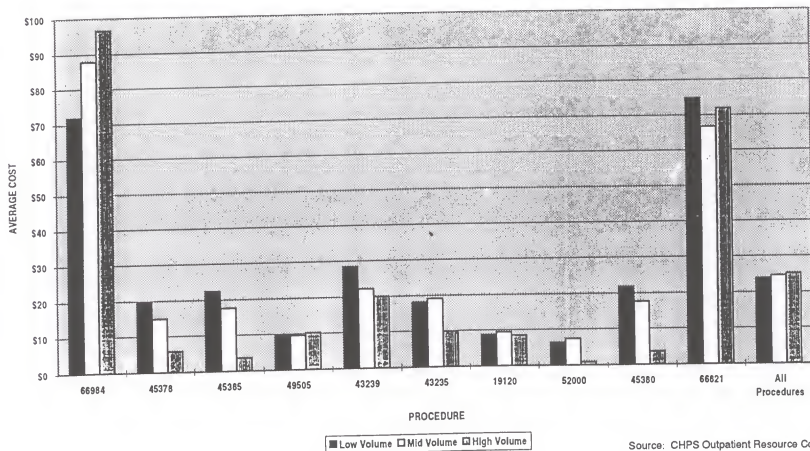
EXHIBIT 3-26B



Source: CHPS Outpatient Resource Costing Data Base

PHARMACEUTICALS COSTS BY VOLUME CATEGORY AND PROCEDURE, HOSPITALS

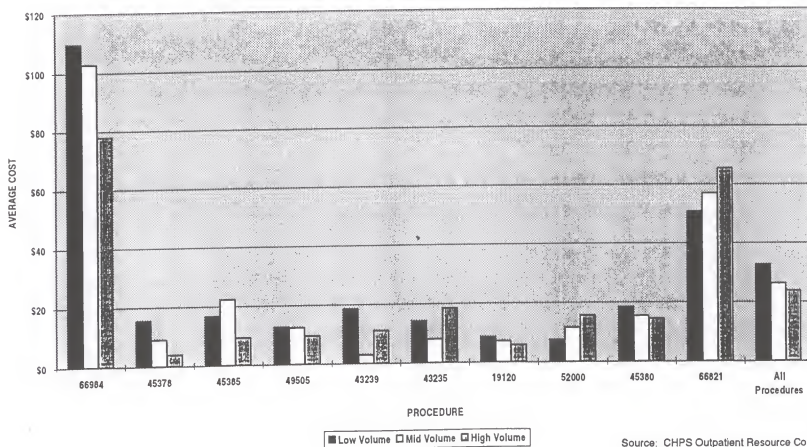
EXHIBIT 3-27A



Source: CHPS Outpatient Resource Costing Data Base

PHARMACEUTICALS COSTS BY VOLUME CATEGORY AND PROCEDURE, AMBULATORY SURGERY CENTERS

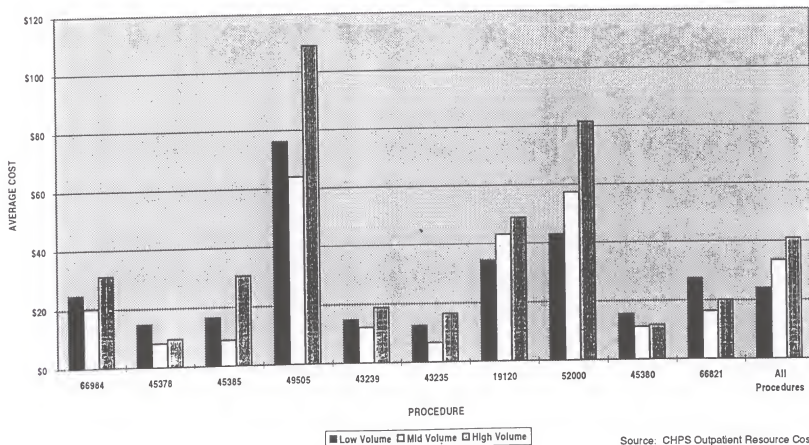
EXHIBIT 3-27B



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-28A

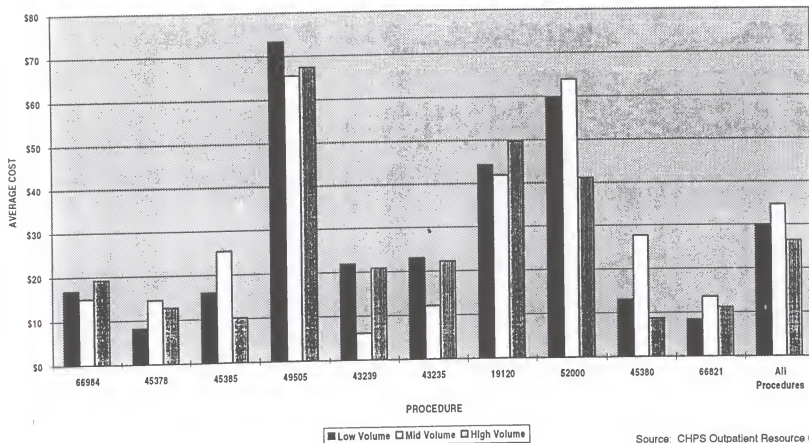
ANESTHESIA COSTS BY VOLUME CATEGORY AND PROCEDURE, HOSPITALS



Source: CHPS Outpatient Resource Costing Data Base

ANESTHESIA COSTS BY VOLUME CATEGORY AND PROCEDURE, AMBULATORY SURGERY CENTERS

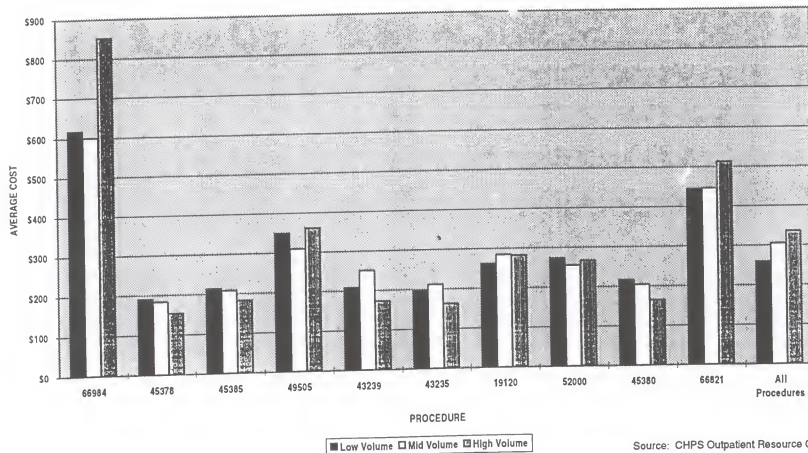
EXHIBIT 3-28B



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29A

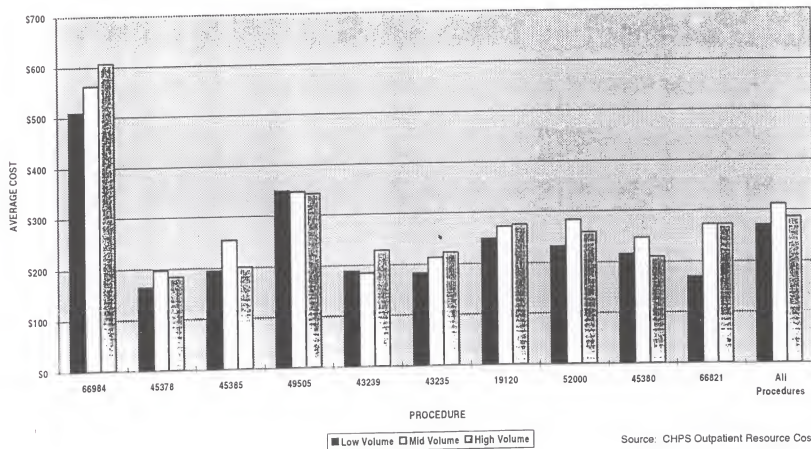
TOTAL DIRECT COSTS BY VOLUME CATEGORY AND PROCEDURE, HOSPITALS



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29B

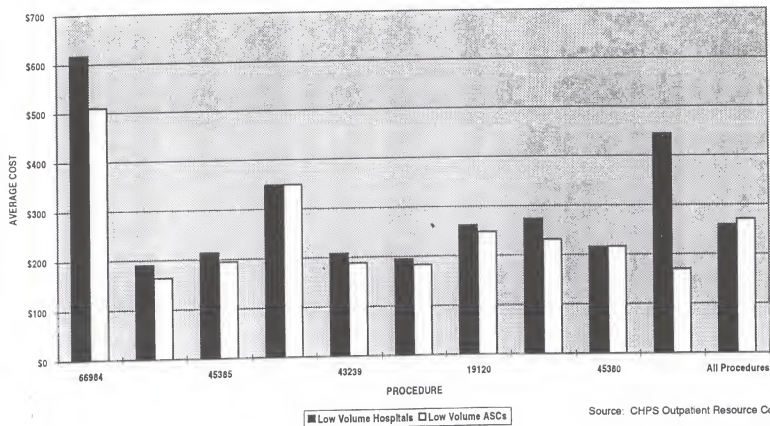
TOTAL DIRECT COSTS BY VOLUME CATEGORY AND PROCEDURE, AMBULATORY SURGERY CENTERS



Source: CHPS Outpatient Resource Costing Data Base

TOTAL DIRECT COSTS BY PROCEDURE, LOW VOLUME FACILITIES

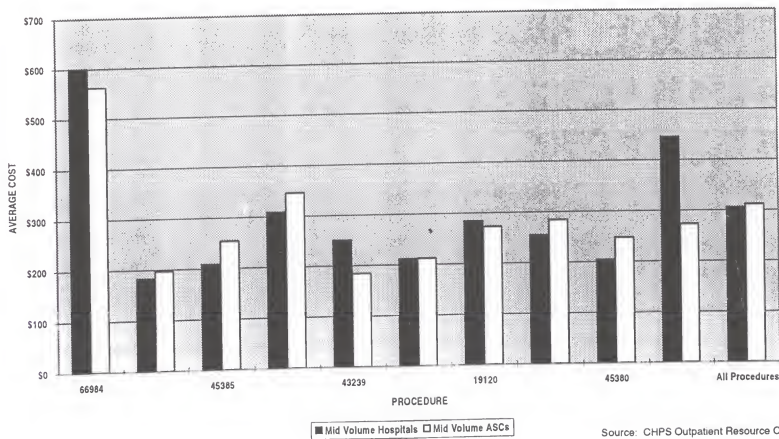
EXHIBIT 3-29C



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29D

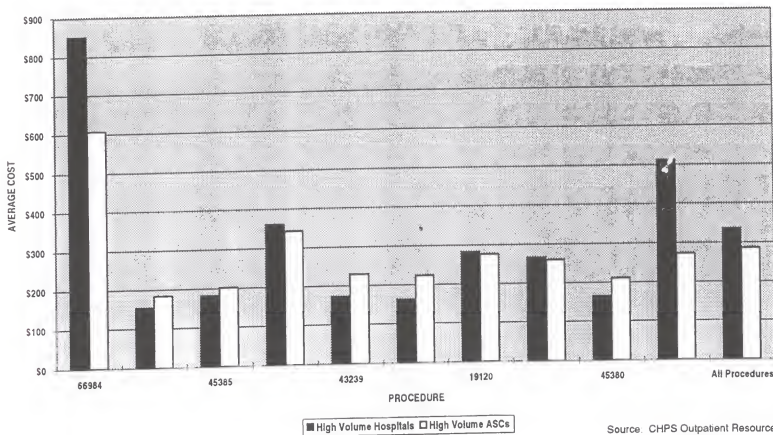
TOTAL DIRECT COSTS BY PROCEDURE, MID VOLUME FACILITIES



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29E

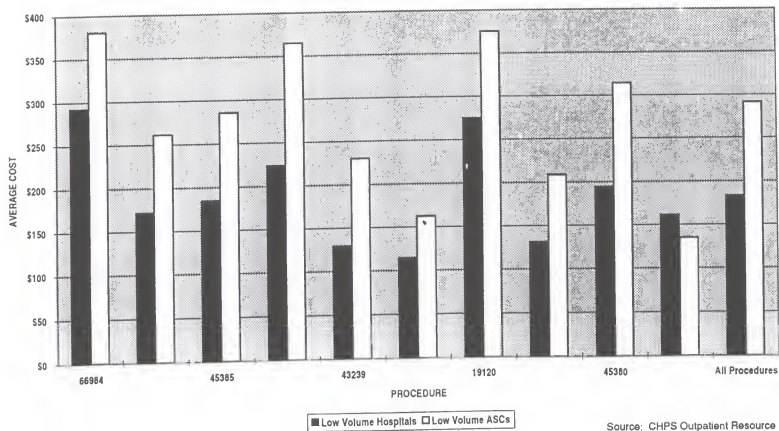
TOTAL DIRECT COSTS BY PROCEDURE, HIGH VOLUME FACILITIES



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29F

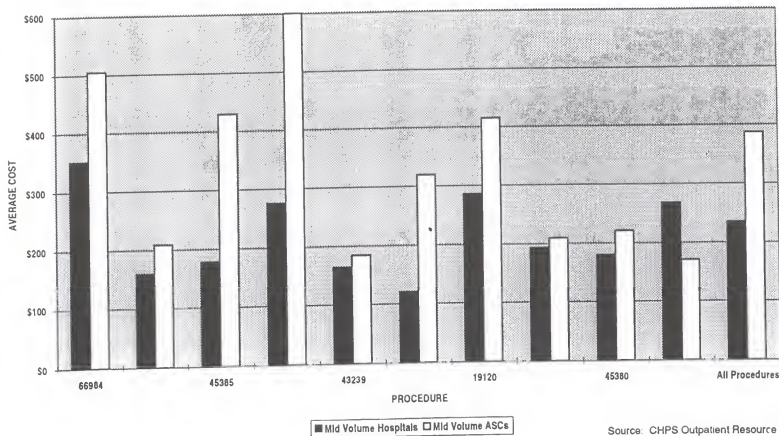
TOTAL INDIRECT COSTS BY PROCEDURES, LOW VOLUME FACILITIES



Source: CHPS Outpatient Resource Costing Data Base

TOTAL INDIRECT COSTS BY PROCEDURE, MID VOLUME FACILITIES

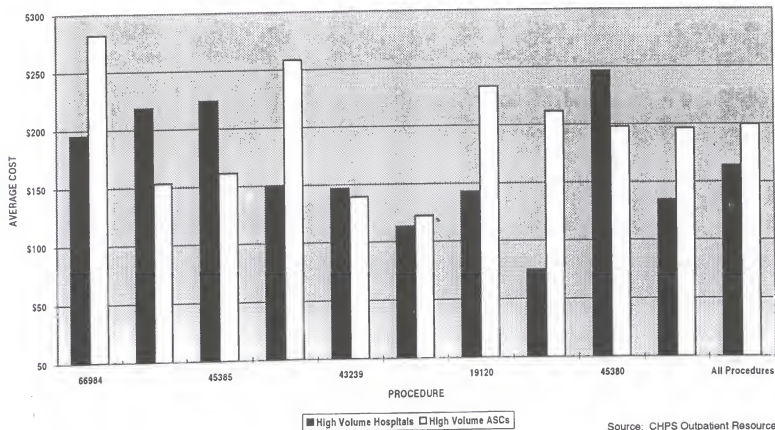
EXHIBIT 3-29G



Source: CHPS Outpatient Resource Costing Data Base

TOTAL INDIRECT COSTS BY PROCEDURE, HIGH VOLUME FACILITIES

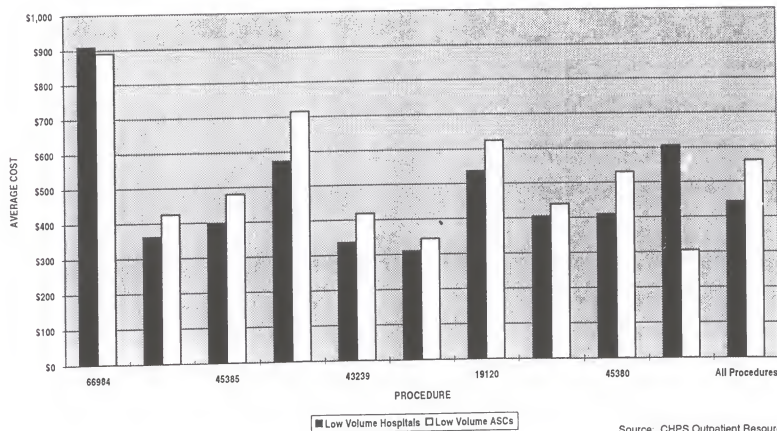
EXHIBIT 3-29H



Source: CHPS Outpatient Resource Costing Data Base

TOTAL COSTS BY PROCEDURE, LOW VOLUME FACILITIES

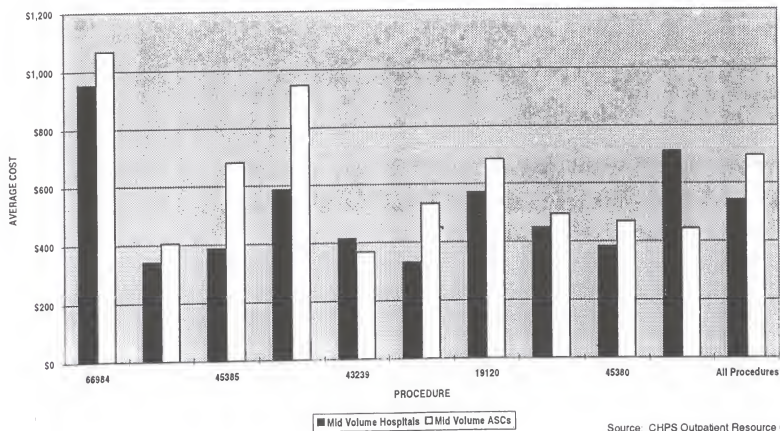
EXHIBIT 3-29I



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29J

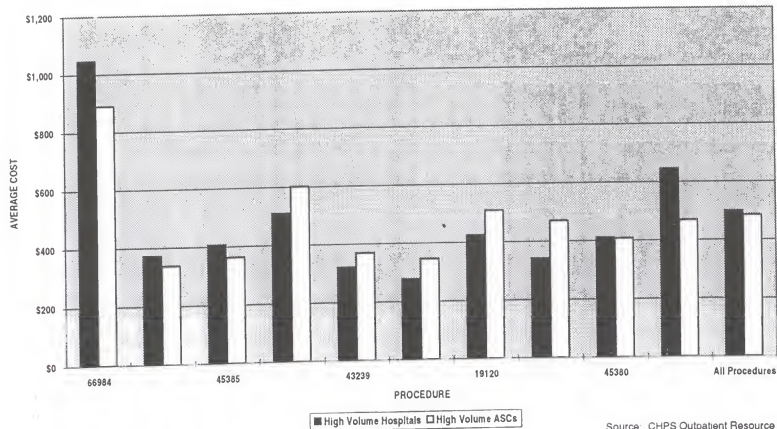
TOTAL COSTS BY PROCEDURE, MID VOLUME FACILITIES



Source: CHPS Outpatient Resource Costing Data Base

EXHIBIT 3-29K

TOTAL COSTS BY PROCEDURES, HIGH VOLUME FACILITIES



Source: CHPS Outpatient Resource Costing Data Base

higher volumes of procedures were completed. The statistical differences in direct labor costs were not consistent with this hypothesis. For both ASCs and hospitals, the lowest cost was found in the low volume facilities, with the second lowest cost found in high volume facilities. The addition of the facilities that perform less than 1,000 procedures annually would probably affect this finding, increasing the costs of the low volume facilities. It was expected that supply, pharmaceutical and anesthesia costs would be lower in high volume facilities because these facilities could use volume discounts when they purchased these items. There was no statistical difference between volume categories for ASCs for these cost components; mid volume and high volume hospitals had higher costs than low volume hospitals, but their costs did not differ from each other.

For six of the ten procedures studied in hospitals and for nine of the ten procedures studied in ASCs, there was no difference in total direct costs between facility sizes. For two of the procedures, high volume hospitals had the highest costs; for two other procedures, mid volume hospitals had significantly higher costs. For some procedures, the mid volume facilities have the highest direct labor costs and the same pattern is found for the costs of equipment. There were no consistent patterns, however, noted for supplies, pharmaceuticals and anesthesia, which may imply that volume discounts have a limited effect on the costs of purchases. The pattern for all procedures studied continues to show inconsistency. The inconsistency of the relationship between volume and cost is evident throughout the data.

It is difficult to identify causes for the findings that have been identified. Unit costs of labor are lower for the low volume facilities since some of these facilities are located in rural areas. Several low volume facilities, however, are ASCs located in urban and suburban areas where low and high volume facilities have similar labor rates. It has been hypothesized that low volume facilities treat patients whose conditions are less complex and, therefore, their costs of care are lower. No evidence has been compiled to support this hypothesis and anecdotal information provided by provider staff indicates that there are few differences in patient condition across providers of ambulatory surgery services.

Volume does not appear to have a consistent effect on direct costs. Subsequent analyses address the effects of volume on indirect costs where the relationship between volume and costs is clearer.

3.4 COSTS OF INDIRECT RESOURCES

Indirect resources are identified, defined and analyzed in the paragraphs that follow. As discussed in Chapter 2, indirect costs were divided into three categories:

- Indirect labor
- Indirect equipment
- Overhead

Indirect labor includes all salary and fringe benefit costs for staff who perform departmental activities that are not directly related to procedures or medical visits. Departmental managers, secretaries and other personnel are included in this definition. Indirect equipment is equipment that is not solely used for specific procedures or for a limited set of procedures. Operating room tables are examples of indirect equipment. Overhead includes all other indirect costs related to the provision of ambulatory care services. Major overhead expense categories are:

- Plant operations
- Housekeeping
- Linen/Laundry
- Medical records
- Maintenance and repairs
- Office supplies
- Space costs
- Administrative and general expense

As expected, overhead was found to be the largest component of indirect cost. Indirect labor costs were similar for ambulatory surgery, radiology, laboratory and medical visits. Indirect equipment costs were highest for ambulatory surgery where substantial equipment items are used for large numbers of procedures. Indirect equipment costs were somewhat less significant for radiology and laboratory and considerably less significant for medical visits.

Indirect costs vary more substantially than direct costs across providers. Greater variation is due, in part, to the use of actual volumes, without the application of norms, to calculate unit costs of indirect resources. As a result, low volume providers have their indirect resources allocated to fewer procedures, which increases their indirect cost per procedure. It is assumed that the study sample reflects the national distribution of providers by volume and that the use of actual volumes to calculate indirect costs results in accurate measurement of indirect costs.

3.4.1 Indirect Costs - Ambulatory Surgery

Analyses of indirect costs of ambulatory surgery are presented in Exhibits 3-30 through 3-33. Costs are presented for the ten procedures that account for the largest proportion of Medicare payments. The same procedures that were included in the analysis of direct costs are used in these exhibits. Data on indirect labor costs for all procedures are presented in Appendix L. Exhibit 3-30 identifies the means, medians and standard deviations for indirect labor costs for high volume procedures. Two key characteristics of the data are noteworthy. First, the ranges of indirect labor costs across providers for the same procedure are far greater than for direct costs. As noted, the use of actual volumes to distribute indirect cost results in high costs for low volume providers. Second, there is a substantial difference in indirect labor costs across procedures. These differences are not due to variations in the nature of indirect labor applied to procedures, but to the procedure mix of the providers that were studied. Similar indirect labor requirements are incurred for procedures performed in the same facility, but the number and mix of procedures to which indirect labor costs are allocated create differences in per procedure costs.

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR INDIRECT LABOR COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	27.54	78.62	17.49	49.74	29.34	71.01		✓	
45378	Colonoscopy, diagnostic	27	13	18.05	48.74	7.94	23.79	28.53	65.43			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	17.22	61.16	8.18	36.67	27.56	71.51		✓	
49505	Repair of inguinal hernia, age 5 or over	27	20	28.23	101.12	12.62	64.94	38.61	83.44		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	15.03	45.24	6.37	34.50	22.20	49.33		✓	
43235	Upper GI endoscopy, diagnostic	24	12	12.03	41.58	4.38	24.41	18.69	47.66		✓	
19120	Excision of cyst	31	23	27.44	90.53	17.25	66.53	27.40	87.78		✓	
52000	Cystourethroscopy (separate procedure)	26	14	18.46	49.64	9.76	51.20	20.27	31.20		✓	
45380	Colonoscopy, for biopsy	27	14	20.74	58.85	8.95	37.64	29.95	69.60		✓	
66821	Discission of secondary membranous cataract	12	12	16.50	39.99	12.72	26.73	15.43	43.35		✓	
	ALL PROCEDURES LISTED ABOVE	248	159	20.44	66.35	11.47	40.38	27.24	69.26		✓	

Source: CHPS Outpatient Resource Costing Data Base

For nine of the ten procedures studied, and for the ten procedures as a group, indirect labor costs were statistically higher for the ASCs than for hospitals.

Exhibit 3-31 identifies mean indirect equipment costs for hospitals and ASCs for high volume procedures and for all procedures. The method used to identify equipment costs in the resource profile database, from which these data are drawn, used norms to establish equipment costs as described in the discussion of direct equipment costs. As a result, the range of costs is not relevant. Indirect equipment is consistently the smallest component of indirect costs. Data on indirect equipment costs for all procedures are presented in Appendix L.

Hospitals had significantly higher indirect equipment costs than did ASCs for three of the ten procedures; there was no statistical difference for six of the ten procedures, and ASCs had the higher cost for one procedure. There was no difference in indirect equipment costs between ASCs and hospitals for the group of ten procedures when analyzed jointly.

Exhibit 3-32 identifies means for overhead costs, the largest component of indirect costs. Overhead costs are most affected by volume. Data on overhead costs for all procedures are presented in Appendix L. Exhibit 3-33 summarizes indirect costs by combining the three components that were presented separately. The analysis identifies means, medians and standard deviations for high volume procedures. Data on total indirect costs for all procedures are presented in Appendix K.

There was a statistically significant difference in total indirect costs for only one procedure; ASCs had the highest total indirect costs for CPT 49505 and for the ten procedures jointly.

3.4.2 Indirect Costs - Radiology

The same analyses that were completed for the indirect costs of ambulatory surgery have been completed for radiology procedures. Exhibit 3-34 identifies means, medians and standard deviations for total indirect costs for the high volume radiology procedures examined in the analysis of direct costs. As in the case of ambulatory surgery, the range of indirect costs is greater than the range of direct costs, because of volume differences among participating providers. Although only total indirect costs are included in Exhibit 3-34, Appendix M includes data on indirect labor costs, indirect equipment costs and overhead for each radiology procedure included in the study.

The only result of interest in Exhibit 3-34 is that hospitals have the higher mean indirect cost when data for the ten procedures are aggregated; the lack of any significant difference for the individual procedures is probably due to the extremely small sample sizes for each of the procedures when analyzed by provider type.

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR INDIRECT EQUIPMENT COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	54.65	41.04	63.46	38.00	15.73	12.17	✓		
45378	Colonoscopy, diagnostic	27	13	33.58	27.30	34.20	22.80	18.33	10.32			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	41.68	35.92	45.60	34.20	17.16	12.94			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	43.74	56.01	34.20	57.00	12.32	14.28		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	26.40	27.42	24.32	22.80	10.69	9.89			✓
43235	Upper GI endoscopy, diagnostic	24	12	23.43	23.12	22.80	22.80	8.44	6.37			✓
19120	Excision of cyst	31	23	46.09	41.97	45.60	45.60	8.54	6.63	✓		
52000	Cystourethroscopy (separate procedure)	26	14	25.28	23.07	22.80	22.80	7.97	3.79			✓
45380	Colonoscopy, for biopsy	27	14	40.67	33.71	41.80	32.30	18.55	10.76			✓
66821	Dissection of secondary membranous cataract	12	11	36.10	25.63	45.60	22.80	11.74	12.98	✓		
	ALL PROCEDURES LISTED ABOVE	248	158	37.20	35.66	34.20	34.20	16.43	14.64			✓

Source: CHPS Outpatient Resource Costing Data Base

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR OVERHEAD COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	223.76	267.67	163.31	253.38	195.36	163.22			✓
45378	Colonoscopy, diagnostic	27	13	108.17	131.34	94.65	70.16	112.93	122.50			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	112.48	185.29	98.45	74.19	114.53	213.39			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	170.48	263.53	149.79	217.61	124.04	211.44		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	87.37	115.16	73.42	74.19	81.73	89.21			✓
43235	Upper GI endoscopy, diagnostic	24	12	70.51	123.33	59.62	59.97	67.65	131.59			✓
19120	Excision of cyst	31	23	194.19	217.99	121.08	189.36	158.25	167.20			✓
52000	Cystourethroscopy (separate procedure)	26	14	119.01	136.91	78.91	134.69	107.84	67.74			✓
45380	Colonoscopy, for biopsy	27	14	119.08	151.67	94.65	110.43	122.00	124.73			✓
66821	Dissection of secondary membranous cataract	12	12	157.39	100.04	125.61	90.59	128.73	94.40			✓
	ALL PROCEDURES LISTED ABOVE	248	159	135.19	183.30	111.12	136.71	131.43	164.06		✓	

Source: CHPS Outpatient Resource Costing Data Base

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR TOTAL INDIRECT COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	305.95	387.33	277.97	379.03	191.62	229.96			✓
45378	Colonoscopy, diagnostic	25	13	172.59	207.39	159.25	115.42	125.76	167.54			✓
45385	Colonoscopy, for removal of polypoid lesion	23	15	186.28	282.38	192.49	156.79	117.91	267.83			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	242.45	420.65	221.04	368.15	130.28	263.97		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	25	13	139.11	187.83	148.94	149.62	85.50	114.92			✓
43235	Upper GI endoscopy, diagnostic	22	12	115.61	188.03	126.46	105.90	71.42	164.90			✓
19120	Excision of cyst	31	23	267.72	350.48	206.71	327.86	158.77	221.81			✓
52000	Cystourethroscopy (separate procedure)	26	14	162.75	209.61	138.63	207.42	117.44	71.75			✓
45380	Colonoscopy, for biopsy	25	14	194.93	244.23	177.43	207.01	130.16	171.28			✓
66821	Dissection of secondary membranous cataract	12	12	209.99	163.47	196.30	142.70	131.29	137.58			✓
	ALL PROCEDURES LISTED ABOVE	238	159	200.93	285.08	183.91	208.26	139.70	215.34		✓	

Source: CHPS Outpatient Resource Costing Data Base

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR TOTAL INDIRECT COSTS,
SELECTED RADIOLOGY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO SIGNIFICANT DIFFERENCE
70551	Magnetic resonance imaging	11	2	147.67	135.34	96.31	135.34	129.66	159.96			✓
70470	Computerized axial tomography	19	3	66.22	55.06	40.46	60.13	63.48	30.61			✓
76091	Mammography, bilateral	17	7	40.13	31.37	21.21	21.99	32.38	24.13			✓
71010	Radiologic examination, chest; single view, frontal	22	7	10.88	5.94	6.93	6.01	11.15	3.82			✓
73510	Radiologic examination, hip, complete	21	9	23.43	17.95	18.29	18.41	18.87	10.53			✓
75631	Aortography, abdominal	16	0	163.87	NA	117.78	NA	109.51	NA			NA
74240	Radiologic examination, gastrointestinal tract, upper	17	5	40.01	44.62	32.27	41.41	30.99	27.85			✓
73041	Radiologic examination, shoulder, arthrography	16	5	59.67	47.25	45.65	43.97	38.78	33.98			✓
78306	Bone imaging, whole body	17	3	121.01	157.86	91.03	66.68	84.83	186.76			✓
77430	Weekly megavoltage treatment management; complex	2	0	199.04	NA	199.04	NA	249.23	NA			NA
	ALL PROCEDURES LISTED ABOVE	158	41	69.67	43.87	39.12	21.99	83.78	67.50	✓		

Notes

- Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices.

Source: CHPS Outpatient Resource Costing Data Base

3.4.3 Indirect Costs - Laboratory

Analyses of the indirect costs of laboratory procedures follow the same format used for ambulatory surgery and radiology. Exhibit 3-35 identifies means, medians and standard deviations for each of the high volume laboratory procedures discussed in the analysis of direct costs of laboratory procedures. Indirect costs for laboratory services, like indirect costs for ambulatory surgery and radiology, have a greater variance across providers than direct cost, because of the impact of volume. As noted in previous discussions, there are few differences in the indirect resources applied to different procedures by a specific provider, but the volume of procedures varies by provider, which leads to substantial differences in per procedure indirect cost. As in the case of radiology, more detailed data have been included in Appendix N than are included in Exhibit 3-35. Appendix N includes data on indirect labor, indirect equipment and overhead for each procedure studied.

3.4.4 Indirect Costs - Medical Visits

Data on the total indirect costs of medical visits are presented in Exhibit 3-36. The exhibit identifies indirect costs for the medical visit codes that were included in direct cost analyses. As was true for the other ambulatory care categories, there is a greater range in indirect costs of medical visits than in direct costs, due to volume differences among providers. Appendix O includes detailed data on indirect labor, indirect equipment and overhead for all medical visits studied.

Hospitals were found to have statistically higher indirect costs than physicians offices for five of the ten procedures studied; there was no difference for the other five procedures. Hospitals had significantly higher indirect costs when the ten procedures were considered jointly.

3.4.5 Effects of Volume on Indirect Costs

The preceding discussions have indicated that volume has a greater effect on indirect costs than on direct costs although, as shown in Exhibits 3-37A through 3-37K, the effect is not substantial. The exhibit addresses the impact of volume on total indirect costs of ambulatory surgery and has been prepared in a format that allows comparisons to Exhibits 3-23A through 3-23K, which was completed for the same procedures, but for direct costs. The expected relationship between volume and cost, i.e., cost decreases as volume increases, was not consistently identified for direct costs, and is also not consistently identified in this analysis of indirect costs. Data on the impact of volume for each ambulatory surgery procedure studied are presented in Appendix P.

For seven of the ten procedures studied, there was no difference in total indirect cost between hospitals and ASCs, or across the volume categories for each facility type. For the remaining three procedures, ASCs had higher costs than did hospitals for most of the volume categories and mid volume ASCs had higher costs than did low or high volume ASCs. For the ten procedures analysed jointly, ASCs had statistically higher costs than hospitals in the low

**MEANS, MEDIAN, AND STANDARD DEVIATIONS FOR TOTAL INDIRECT COSTS,
SELECTED LABORATORY PROCEDURES
(HOSPITAL OPDs)**

CPT CODE	PROCEDURE	SAMPLE SIZE	MEAN COST	MEDIAN COST	STANDARD DEVIATION
86074	Blood cross match antiglobulin technique	5	38.23	43.80	19.54
87070	Culture, bacterial, definitive; any source	6	68.66	54.02	44.39
82947	Glucose except urine	6	13.15	7.93	11.70
84132	Potassium; blood	6	8.28	4.96	9.05
84478	Triglycerides, blood	6	17.09	7.10	24.54
82270	Blood occult, feces screening	5	9.61	4.92	8.63
94700	Analysis of arterial blood gas	11	40.53	11.86	79.62
80019	Automated multichannel test, 19 or more tests	6	24.99	17.94	21.81
81000	Urinalysis, routine	7	14.29	8.77	12.29
85022	Blood count; hemogram, automated and manual differential	6	30.51	18.03	37.61
	ALL PROCEDURES LISTED ABOVE	64	27.52	13.88	41.62

Source: CHPS Outpatient Resource Costing Data Base

**MEANS, MEDIANS, AND STANDARD DEVIATIONS FOR TOTAL INDIRECT COSTS,
MEDICAL VISITS - SELECTED HIGH VOLUME DIAGNOSES**

ICD9-CM CODE	DIAGNOSIS	SAMPLE SIZE		MEAN COST		MEDIAN COST		STANDARD DEVIATION		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO SIGNIFICANT DIFFERENCE
883.0	Open wound of finger without complication	9	8	82.65	39.09	50.53	37.03	76.83	21.02			✓
616.1	Inflammatory disease of cervix, vagina, and vulva	12	10	62.26	26.91	45.45	22.59	40.36	12.26	✓		
382.9	Suppurative and unspecified otitis media	10	9	32.62	21.91	25.16	22.64	21.14	9.70			✓
784.0	Symptoms involving head and neck- headache	10	10	72.82	32.71	77.34	22.26	35.65	25.64	✓		
465.9	Acute upper respiratory infection- unspecified	11	10	54.81	27.22	50.53	19.92	35.23	17.45	✓		
780.3	General symptoms- convulsions	10	7	109.37	77.96	91.02	69.72	38.03	23.14	✓		
366.9	Cataract- unspecified visual disturbance	3	5	58.62	69.32	65.84	59.76	16.26	25.20			✓
601.9	Inflammatory diseases of prostate	10	10	54.55	26.50	54.74	23.99	18.58	9.51	✓		
493.9	Asthma- unspecified	10	8	124.17	109.25	141.54	107.71	42.09	57.01			✓
365.11	Glaucoma- primary open angle glaucoma	3	5	55.51	61.84	54.45	65.90	9.43	21.34			✓
	ALL PROCEDURES LISTED ABOVE	88	82	72.40	45.35	59.13	30.11	47.01	36.25	✓		

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 66984

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	9	11	33.91	72.65			✓	No difference in means across hospital volume categories
MID-VOLUME	10	6	26.74	91.06		✓		No difference in means across ASC volume categories
HIGH VOLUME	3	6	11.09	77.12		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	9	11	54.04	34.75	✓			No difference in means across hospital volume categories.
MID-VOLUME	10	6	52.06	51.93			✓	Mid-volume ASCs have higher mean than low and high volume
HIGH VOLUME	3	6	65.11	41.67	✓			ASCs, whose means do not differ significantly from each other
OVERHEAD COST								
LOW VOLUME	9	11	203.99	273.09			✓	No difference in means across hospital volume categories
MID-VOLUME	10	6	272.99	362.03			✓	Mid-volume ASCs have higher mean than high volume ASCs, but
HIGH VOLUME	3	6	118.93	163.36			✓	neither mean differs significantly from that of low volume ASCs.
TOTAL INDIRECT COST								
LOW VOLUME	9	11	291.95	380.50			✓	No difference in means across hospital volume categories
MID-VOLUME	10	6	351.79	505.02			✓	No difference in means across ASC volume categories
HIGH VOLUME	3	6	195.13	282.16			✓	

Note: Description of CPT code 66984: Extracapsular cataract removal with insertion of intraocular lens

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45378

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	19	5	22.47	65.95			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	10.07	46.33			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	0.00	32.99		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	19	5	34.04	23.86	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	3	27.49	29.13			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	47.50	29.64			✓	
OVERHEAD COST								
LOW VOLUME	19	5	97.42	171.34			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	121.32	132.74			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	170.87	90.50			✓	
TOTAL INDIRECT COST								
LOW VOLUME	17	5	172.04	261.15			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	158.88	209.20			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	218.37	153.13			✓	

Note: Description of CPT code 45378: Colonoscopy, diagnostic

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45385

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	17	6	20.85	71.12			✓	No difference in means across hospital volume categories
MID-VOLUME	6	4	12.69	78.82		✓	✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	0.00	35.08				
INDIRECT EQUIPMENT COST								
LOW VOLUME	17	6	41.40	33.44			✓	No difference in means across hospital volume categories
MID-VOLUME	6	4	38.63	42.75			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	53.20	33.44			✓	
OVERHEAD COST								
LOW VOLUME	17	6	100.52	180.71			✓	No difference in means across hospital volume categories
MID-VOLUME	6	4	126.89	307.78			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	170.87	92.81			✓	
TOTAL INDIRECT COST								
LOW VOLUME	15	6	184.47	285.27			✓	No difference in means across hospital volume categories
MID-VOLUME	6	4	178.22	429.35			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	224.07	161.32			✓	

Note: Description of CPT code 45385: Colonoscopy for removal of polypoid lesion

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 49505

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	10	8	38.59	98.06			✓	No difference in means across hospital volume categories
MID-VOLUME	14	7	25.55	130.20		✓		No difference in means across ASC volume categories.
HIGH VOLUME	3	5	6.25	65.30		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	10	8	42.18	53.68			✓	No difference in means across hospital volume categories.
MID-VOLUME	14	7	44.19	66.12		✓		Mid-volume ASCs have higher mean than low and high volume
HIGH VOLUME	3	5	46.87	45.60			✓	ASCs, whose means do not differ significantly from each other
OVERHEAD COST								
LOW VOLUME	10	8	142.73	213.43			✓	No difference in means across hospital volume categories
MID-VOLUME	14	7	206.10	403.62		✓		Mid-volume ASCs have higher mean than low and high volume
HIGH VOLUME	3	5	96.73	147.54			✓	ASCs, whose means do not differ significantly from each other
TOTAL INDIRECT COST								
LOW VOLUME	10	8	223.49	365.16		✓		No difference in means across hospital volume categories
MID-VOLUME	14	7	275.84	599.94		✓		Mid-volume ASCs have higher mean than low and high volume
HIGH VOLUME	3	5	149.84	258.44			✓	ASCs, whose means do not differ significantly from each other

Note: Description of CPT code 49505: Repair of inguinal hernia, age 5 or over

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 43239

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES. 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES. 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES. MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	19	6	17.52	58.27			✓	No difference in means across hospital volume categories
MID-VOLUME	6	2	12.18	38.86		✓		No difference in means across ASC volume categories
HIGH VOLUME	2	5	0.00	32.18			✓	
INDIRECT EQUIPMENT COST								
LOW VOLUME	19	6	22.92	28.37			✓	Mid- and high volume hospitals have higher means than low volume
MID-VOLUME	6	2	32.93	22.80	✓			hospitals, but their means do not differ significantly from each other
HIGH VOLUME	2	5	39.90	28.12			✓	No difference in means across ASC volume categories.
OVERHEAD COST								
LOW VOLUME	19	6	75.39	143.31		✓		No difference in means across hospital volume categories
MID-VOLUME	6	2	118.92	121.96			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	106.57	78.68			✓	
TOTAL INDIRECT COST								
LOW VOLUME	17	6	129.45	229.95		✓		No difference in means across hospital volume categories
MID-VOLUME	6	2	164.03	183.61			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	146.47	138.97			✓	

Note: Description of CPT code 43239: Upper GI endoscopy, for biopsy or collection of specimen

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 43235

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	17	5	13.39	49.65			✓	No difference in means across hospital volume categories
MID-VOLUME	5	3	12.19	56.66		✓		No difference in means across ASC volume categories.
HIGH VOLUME	2	4	0.00	20.17		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	17	5	22.35	19.00			✓	No difference in means across hospital volume categories.
MID-VOLUME	5	3	26.60	26.60			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	4	24.70	25.65			✓	
OVERHEAD COST								
LOW VOLUME	17	5	65.30	93.56			✓	No difference in means across hospital volume categories
MID-VOLUME	5	3	81.17	235.78			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	4	88.19	76.22			✓	
TOTAL INDIRECT COST								
LOW VOLUME	15	5	114.52	162.21			✓	No difference in means across hospital volume categories
MID-VOLUME	5	3	119.96	319.04			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	4	112.89	122.04			✓	

Note: Description of CPT code 43235: Upper GI endoscopy, diagnostic

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 19120

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	12	10	32.64	105.78		✓		No difference in means across hospital volume categories
MID-VOLUME	16	7	27.22	88.29		✓		No difference in means across ASC volume categories.
HIGH VOLUME	3	6	7.86	67.73		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	12	10	42.75	41.80			✓	Mid-volume hospitals have higher mean than low volume hospitals.
MID-VOLUME	16	7	48.69	40.71	✓			but neither mean differs significantly from that of high volume hospitals
HIGH VOLUME	3	6	45.60	43.70			✓	No difference in means across ASC volume categories.
OVERHEAD COST								
LOW VOLUME	12	10	199.56	227.93			✓	No difference in means across hospital volume categories.
MID-VOLUME	16	7	209.86	285.99			✓	Mid-volume ASCs have higher mean than high volume ASCs, but
HIGH VOLUME	3	6	89.07	122.09			✓	neither mean differs significantly from that of low volume ASCs
TOTAL INDIRECT COST.								
LOW VOLUME	12	10	274.95	375.50			✓	No difference in means across hospital volume categories.
MID-VOLUME	16	7	285.76	415.00			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	142.53	233.51			✓	

Note: Description of CPT code 19120: Excision of cyst

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 52000

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	9	5	21.48	27.05			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	18.18	48.09		✓	✓	High volume ASCs have higher mean than low volume ASCs, but neither mean differs significantly from that of mid-volume ASCs
HIGH VOLUME	2	5	6.95	73.45				
INDIRECT EQUIPMENT COST								
LOW VOLUME	9	5	23.64	21.28			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	26.60	22.80			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	22.80	25.08			✓	
OVERHEAD COST								
LOW VOLUME	9	5	86.71	159.94		✓		No difference in means across hospital volume categories.
MID-VOLUME	15	4	148.23	138.17			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	45.22	112.86			✓	
TOTAL INDIRECT COST								
LOW VOLUME	9	5	131.83	208.27		✓		No difference in means across hospital volume categories.
MID-VOLUME	15	4	193.01	209.07			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	74.96	211.40		✓		

Note: Description of CPT code 52000: Cystourethroscopy (separate procedure)

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45380

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	19	5	25.51	77.48			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	12.53	50.47			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	6	0.00	47.53		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	19	5	40.40	32.07			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	36.10	34.20			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	6	57.00	34.83	✓			
OVERHEAD COST								
LOW VOLUME	19	5	107.81	204.68			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	131.40	136.05			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	189.25	115.30			✓	
TOTAL INDIRECT COST								
LOW VOLUME	17	5	194.15	314.23			✓	No difference in means across hospital volume categories
MID-VOLUME	6	3	180.03	220.72			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	6	246.25	197.66			✓	

Note: Description of CPT code 45380: Colonoscopy, for biopsy

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 66821

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	4	6	13.27	18.40			✓	No difference in means across hospital volume categories
MID-VOLUME	6	1	20.23	40.38			✓	High volume ASCs have higher mean than low volume ASCs, but
HIGH VOLUME	2	5	11.79	65.83			✓	neither mean differs significantly from that of mid-volume ASCs.
INDIRECT EQUIPMENT COST								
LOW VOLUME	4	6	28.50	18.49			✓	No difference in means across hospital volume categories
MID-VOLUME	6	1	38.00	45.60			✓	Mid- and high volume ASCs have higher means than low volume
HIGH VOLUME	2	4	45.60	31.35	✓			ASCs, but their means do not differ significantly from each other.
OVERHEAD COST								
LOW VOLUME	4	6	119.43	98.25			✓	No difference in means across hospital volume categories
MID-VOLUME	6	1	209.58	84.50			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	76.76	105.29			✓	
TOTAL INDIRECT COST								
LOW VOLUME	4	6	161.20	135.15			✓	No difference in means across hospital volume categories
MID-VOLUME	6	1	267.81	170.48			✓	No difference in means across ASC volume categories
HIGH VOLUME	2	5	134.15	196.05			✓	

Note: Description of CPT code 66821: Dissection of secondary membrane cataract

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF INDIRECT COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES:
SUM OF 10 HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

INDIRECT COST COMPONENT/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
INDIRECT LABOR COST								
LOW VOLUME	135	67	23.38	69.09		✓		Low and mid-volume hospitals have higher means than high volume hospitals, but their means do not differ significantly from each other. Mid-volume ASCs have higher mean than high volume ASCs, but neither mean differs significantly from that of low volume ASCs.
MID-VOLUME	90	40	20.00	79.05		✓		
HIGH VOLUME	23	52	4.92	53.06		✓		
INDIRECT EQUIPMENT COST								
LOW VOLUME	135	67	34.68	32.73			✓	High volume hospitals have higher mean than mid- and low volume hospitals; mid-volume hospitals have higher mean than low-volume hospitals. Mid-volume ASCs have higher mean than low and high volume ASCs, whose means do not differ significantly from each other.
MID-VOLUME	90	40	38.77	42.07	✓		✓	
HIGH VOLUME	23	51	45.83	34.48				
OVERHEAD COST								
LOW VOLUME	135	67	111.61	189.13		✓		Mid-volume hospitals have higher mean than low- and high volume hospitals, whose means do not differ significantly from each other. Mid-volume ASCs have higher mean than low and high volume ASCs. Low volume ASCs have higher mean than high volume ASCs.
MID-VOLUME	90	40	176.12	265.63		✓		
HIGH VOLUME	23	52	113.46	112.46			✓	
TOTAL INDIRECT COST								
LOW VOLUME	125	67	183.23	290.94		✓		Mid-volume hospitals have higher mean than low- and high volume hospitals, whose means do not differ significantly from each other. Mid-volume ASCs have higher mean than low and high volume ASCs. Low volume ASCs have higher mean than high volume ASCs.
MID-VOLUME	90	40	234.90	386.75		✓		
HIGH VOLUME	23	52	164.21	199.32			✓	

Note: The 10 procedures included in this table are CPT codes 66984, 45378, 45385, 49505, 43239, 43235, 19120, 52000, 45380, and 66821.

Source: CHPS Outpatient Resource Costing Data Base

volume and mid volume categories, while mid volume facilities (hospitals and ASCs) had higher mean total indirect costs than low or high volume facilities.

3.5 PRESENTATION OF TOTAL COSTS

Four exhibits are presented to summarize the data collected in the study and discussed in this chapter. Exhibits 3-38A through 3-38K present total cost data for ambulatory surgery. These exhibits identifies total direct and total indirect costs for each procedure studied by hospital outpatient departments and ambulatory surgery centers. This format, which has been used throughout the chapter, provides an initial understanding of the differences in costs between hospitals and ASCs. This issue is the subject of further analyses that are presented in the next chapter.

For five of the ten procedures, there was no statistical difference in any of the three cost categories when analyzed across volume sizes. ASCs had higher costs in one or more volume categories for four of the procedures, and hospitals had higher costs for one procedure. In most cases, there was no statistical difference in costs across the volume categories for the facility types. ASCs had the higher costs for four volume categories for the ten procedures analysed jointly; there was no statistical difference between facility type costs for the other volume categories. Mid volume facilities (hospitals and ASCs) had higher total indirect and total costs.

Exhibits 3-39A through 3-39C present direct, indirect, and total cost data for all surgical procedures studied. The same cost data for radiological procedures are presented in Exhibits 3-40A through 3-40C, for laboratory procedures in Exhibits 3-41A through 3-41C, and for medical visits in Exhibits 3-42A through 3-42C. It should be noted that the aggregation means calculated in Exhibits 3-39A through 3-42C reflect simple averages.

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 66984**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	9	11	617.46	509.50			✓	High volume hospitals have higher mean than low and mid-volume hospitals, whose means do not differ from each other.
MID-VOLUME	10	6	600.29	561.75			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	851.51	606.89			✓	
TOTAL INDIRECT COST								
LOW VOLUME	9	11	291.95	380.50			✓	No difference in means across hospital volume categories.
MID-VOLUME	10	6	351.79	505.02			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	195.13	282.16			✓	
TOTAL COST								
LOW VOLUME	9	11	909.41	890.00			✓	No difference in means across hospital volume categories.
MID-VOLUME	10	6	952.08	1066.77			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	1046.64	889.05			✓	

Note: Description of CPT code 66984: Extracapsular cataract removal with insertion of intraocular lens.

Source: CHPS Outpatient Resource Costing Data Base.

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45378**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	19	5	189.87	163.08			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	182.72	196.67			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	153.82	183.51				
TOTAL INDIRECT COST								
LOW VOLUME	17	5	172.04	261.15			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	158.88	208.20			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	218.37	153.13				
TOTAL COST								
LOW VOLUME	19	5	343.80	424.23			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	341.60	404.87			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	372.19	336.64			✓	

Note: Description of CPT code 45378: Colonoscopy, diagnostic

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45385**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	17	6	213.41	194.47			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	208.02	253.58			✓	Mid-volume ASCs have higher mean than low volume ASCs, but
HIGH VOLUME	2	5	182.56	200.97			✓	neither mean differs significantly from that of high volume ASCs
TOTAL INDIRECT COST								
LOW VOLUME	15	6	184.47	285.27			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	178.22	429.35			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	224.07	161.32			✓	
TOTAL COST								
LOW VOLUME	17	6	376.18	479.74			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	4	386.24	682.93			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	406.63	362.29			✓	

Note: Description of CPT code 45385: Colonoscopy, for removal of polypoid lesion

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 49505**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	10	8	348.89	349.15			✓	Low and high volume hospitals have higher means than mid-volume hospitals, but their means do not differ significantly from each other. No difference in means across ASC volume categories.
MID-VOLUME	14	7	308.79	346.21			✓	
HIGH VOLUME	3	5	361.16	342.80			✓	
TOTAL INDIRECT COST								
LOW VOLUME	10	8	223.49	365.16		✓		No difference in means across hospital volume categories Mid-volume ASCs have higher mean than low and high volume ASCs, whose means do not differ significantly from each other
MID-VOLUME	14	7	275.84	599.94		✓		
HIGH VOLUME	3	5	149.84	258.44			✓	
TOTAL COST								
LOW VOLUME	10	8	572.39	714.31		✓		No difference in means across hospital volume categories. Mid-volume ASCs have higher mean than low and high volume ASCs, whose means do not differ significantly from each other.
MID-VOLUME	14	7	584.63	946.15		✓		
HIGH VOLUME	3	5	511.00	601.24			✓	

Note: Description of CPT code 49505: Repair of inguinal hernia, age 5 or over

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 43239**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	19	6	207.91	188.27			✓	Mid-volume hospitals have higher mean than low and high volume hospitals, whose means do not differ from each other. No difference in means across ASC volume categories
MID-VOLUME	6	2	250.24	184.05			✓	
HIGH VOLUME	2	5	173.15	228.42			✓	
TOTAL INDIRECT COST								
LOW VOLUME	17	6	129.45	229.95		✓		No difference in means across hospital volume categories.
MID-VOLUME	6	2	164.03	183.61			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	146.47	138.97			✓	
TOTAL COST								
LOW VOLUME	19	6	323.73	418.21			✓	Mid-volume hospitals have higher mean than low volume hospitals, but neither mean differs significantly from that of high volume hospitals No difference in means across ASC volume categories
MID-VOLUME	6	2	414.26	367.66			✓	
HIGH VOLUME	2	5	319.61	367.39			✓	

Note: Description of CPT code 43239: Upper GI endoscopy, for biopsy or collection of specimen

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 43235**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	17	5	194.63	182.70			✓	Mid-volume hospitals have higher mean than high volume hospitals, but neither mean differs significantly from that of low volume hospitals. No difference in means across ASC volume categories.
MID-VOLUME	5	3	211.04	212.23			✓	
HIGH VOLUME	2	4	163.33	222.57			✓	
TOTAL INDIRECT COST								
LOW VOLUME	15	5	114.52	162.21			✓	No difference in means across hospital volume categories. No difference in means across ASC volume categories.
MID-VOLUME	5	3	119.96	319.04			✓	
HIGH VOLUME	2	4	112.89	122.04			✓	
TOTAL COST								
LOW VOLUME	17	5	295.68	344.91			✓	No difference in means across hospital volume categories. No difference in means across ASC volume categories.
MID-VOLUME	5	3	330.99	531.27			✓	
HIGH VOLUME	2	4	276.23	344.61			✓	

Note: Description of CPT code 43235: Upper GI endoscopy, diagnostic

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 19120**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	12	10	261.39	248.00			✓	No difference in means across hospital volume categories
MID-VOLUME	16	7	283.52	272.15			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	282.37	275.66			✓	
TOTAL INDIRECT COST								
LOW VOLUME	12	10	274.95	375.50			✓	No difference in means across hospital volume categories
MID-VOLUME	16	7	285.76	415.00			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	142.53	233.51			✓	
TOTAL COST								
LOW VOLUME	12	10	536.34	623.51			✓	No difference in means across hospital volume categories
MID-VOLUME	16	7	569.28	687.15			✓	No difference in means across ASC volume categories.
HIGH VOLUME	3	6	424.90	509.17			✓	

Note Description of CPT code 19120 Excision of cyst

Source CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 52000**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES; MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	9	5	273.46	231.40			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	254.26	283.62			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	266.33	259.16			✓	
TOTAL INDIRECT COST								
LOW VOLUME	9	5	131.83	208.27		✓		No difference in means across hospital volume categories.
MID-VOLUME	15	4	193.01	209.07			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	74.96	211.40				
TOTAL COST								
LOW VOLUME	9	5	405.29	439.67			✓	No difference in means across hospital volume categories.
MID-VOLUME	15	4	447.27	492.69			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	341.29	470.56		✓		

Note: Description of CPT code 52000: Cystourethroscopy (separate procedure)

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 45380**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	19	5	215.75	215.96			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	203.87	247.18			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	165.64	210.14			✓	
TOTAL INDIRECT COST								
LOW VOLUME	17	5	194.15	314.23			✓	No difference in means across hospital volume categories.
MID-VOLUME	6	3	180.03	220.72			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	246.25	197.66			✓	
TOTAL COST								
LOW VOLUME	19	5	389.46	530.19		✓		No difference in means across hospital volume categories.
MID-VOLUME	6	3	383.90	467.90			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	6	411.89	407.80			✓	

Note: Description of CPT code 45380: Colonoscopy, for biopsy

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS
ACROSS VOLUME CATEGORIES AND FACILITY TYPES: CPT CODE 66821**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	4	6	444.82	169.85	✓			No difference in means across hospital volume categories
MID-VOLUME	6	1	445.83	272.53	✓		✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	512.38	272.65				
TOTAL INDIRECT COST								
LOW VOLUME	4	6	161.20	135.15			✓	No difference in means across hospital volume categories
MID-VOLUME	6	1	167.81	170.48			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	134.15	196.05				
TOTAL COST								
LOW VOLUME	4	6	606.01	304.99	✓			No difference in means across hospital volume categories.
MID-VOLUME	6	1	713.64	443.01			✓	No difference in means across ASC volume categories.
HIGH VOLUME	2	5	646.53	468.70			✓	

Note: Description of CPT code 66821: Dissection of secondary membranous cataract.

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF DIRECT, INDIRECT, AND TOTAL COSTS ACROSS VOLUME CATEGORIES AND FACILITY TYPES:
SUM OF 10 HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

COST CATEGORY/ FACILITY VOLUME	SAMPLE SIZE		MEAN COST		STATISTICAL TESTING ACROSS FACILITY TYPES, 90 PERCENT CONFIDENCE LEVEL			STATISTICAL TESTING ACROSS VOLUME CATEGORIES, 90 PERCENT CONFIDENCE LEVEL
	HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO SIGNIFICANT DIFFERENCE	(MEANS COMPARISON OF 3 HOSPITAL VOLUME CATEGORIES, MEANS COMPARISON OF 3 ASC VOLUME CATEGORIES)
TOTAL DIRECT COST								
LOW VOLUME	135	67	259.38	271.03			✓	Mid- and high volume hospitals have higher means than low volume hospitals, but their means do not differ significantly from each other. No difference in means across ASC volume categories.
MID-VOLUME	90	40	305.28	311.42			✓	
HIGH VOLUME	23	52	335.63	286.23			✓	
TOTAL INDIRECT COST								
LOW VOLUME	125	67	183.23	290.94		✓		Mid-volume hospitals have higher mean than low- and high volume hospitals, whose means do not differ significantly from each other. Mid-volume ASCs have higher mean than low and high volume ASCs; low volume ASCs have higher mean than high volume ASCs
MID-VOLUME	90	40	234.90	386.75		✓		
HIGH VOLUME	23	52	164.21	199.32		✓	✓	
TOTAL COST								
LOW VOLUME	135	67	429.04	561.97		✓		Mid-volume hospitals have higher mean than low volume hospitals, but neither mean differs significantly from that of high volume hospitals. Mid-volume ASCs have higher mean than low and high volume ASCs; low volume ASCs have higher mean than high volume ASCs
MID-VOLUME	90	40	540.18	698.17		✓		
HIGH VOLUME	23	52	499.84	485.55			✓	

Note: The 10 procedures included in this table are CPT codes 66984, 45378, 45385, 49505, 43239, 43235, 19120, 52000, 45380, and 66821

Source: CHPS Outpatient Resource Costing Data Base

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, POST-PAY AND ASC											Statistical Significance (90 percent)		
SURGICAL PROCEDURES	APG#	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
SUPERFICIAL NEEDLE BIOPSY & ASPIRATION													
CPT CODE	19000	Puncture aspiration of cyst of br	10	5	\$110.42	\$107.83	\$108.14	\$72.40	\$48.34	\$69.40			✓
CPT CODE	19100	Biopsy of breast, needle (separ	6	7	\$270.93	\$174.71	\$230.97	\$182.38	\$161.50	\$95.00			✓
CPT CODE	60100	Biopsy, thyroid, percutaneous n	2	1	\$215.19	\$398.20	\$215.19	N.A.	\$76.27	N.A.			✓
SIMPLE INCISION & DRAINAGE													
CPT CODE	10000	Incision and drainage of infected	17	7	\$214.28	\$227.58	\$214.48	\$224.46	\$67.33	\$73.74			✓
CPT CODE	10060	Incision and drainage of absces	19	11	\$233.72	\$204.45	\$241.48	\$213.93	\$62.96	\$79.29			✓
CPT CODE	10120	Incision & removal of foreign bo	18	15	\$223.60	\$226.01	\$226.82	\$217.26	\$77.05	\$61.44			✓
COMPLEX INCISION AND DRAINAGE													
CPT CODE	10141	Incision and drainage of hemat	15	11	\$300.13	\$269.95	\$303.76	\$271.00	\$65.35	\$44.17			✓
CPT CODE	10180	Incision and drainage, complex,	15	9	\$333.10	\$262.97	\$300.37	\$283.24	\$91.78	\$64.94	✓		
CPT CODE	23931	Incision and drainage, upper arr	11	5	\$289.50	\$294.87	\$273.48	\$299.28	\$73.63	\$70.68			✓
CPT CODE	28002	Deep dissection below fascia, f	10	4	\$330.09	\$262.24	\$350.94	\$271.72	\$99.45	\$68.52			✓
COMPLEX INCISION AND DRAINAGE													
CPT CODE	11700	Debridement of nails, manual; f	14	6	\$144.81	\$174.99	\$137.49	\$182.98	\$48.31	\$20.75			✓
CPT CODE	11701	Debridement of nails, manual; e	15	6	\$155.68	\$182.57	\$144.01	\$182.31	\$45.91	\$25.43			✓
SIMPLE DEBRIDEMENT & DESTRUCTION													
CPT CODE	11040	Debridement of skin, partial thi	14	10	\$247.89	\$249.68	\$259.30	\$248.33	\$53.64	\$48.87			✓
CPT CODE	11730	Avulsion of nail plate, partial or	16	10	\$183.37	\$197.45	\$188.65	\$194.80	\$62.68	\$84.31			✓
CPT CODE	17000	Destruction by any method, with	10	9	\$184.20	\$187.75	\$188.55	\$194.80	\$32.07	\$49.23			✓
CPT CODE	20670	Removal of implant; superficial,	17	15	\$317.17	\$276.78	\$300.95	\$266.82	\$91.53	\$68.51			✓
SIMPLE EXCISION & BIOPSY													
CPT CODE	11401	Excision, benign lesion, except	24	13	\$207.02	\$226.44	\$189.44	\$235.94	\$51.09	\$60.34			✓
CPT CODE	11440	Excision, other benign lesion (ur	26	16	\$203.77	\$201.11	\$183.04	\$191.25	\$60.14	\$65.82			✓
CPT CODE	11601	Excision, malignant lesion; trun	25	12	\$220.37	\$230.26	\$212.81	\$223.01	\$58.65	\$56.43			✓
CPT CODE	11642	Excision, malignant lesion, face	26	15	\$234.34	\$254.22	\$231.23	\$260.89	\$77.84	\$51.78			✓
COMPLEX EXCISION, BIOPSY & DEBRIDEMENT													
CPT CODE	11404	Excision, benign lesion, except	17	18	\$218.45	\$226.18	\$222.42	\$229.28	\$52.40	\$57.92			✓
CPT CODE	11406	Excision, benign lesion, except	18	19	\$215.21	\$234.34	\$216.32	\$232.19	\$47.73	\$66.49			✓
CPT CODE	11643	Excision, malignant, lesion, face	16	12	\$228.55	\$247.53	\$229.11	\$260.25	\$61.34	\$55.27			✓
LIPECTOMY & EXCISION WITH RECONSTRUCTION													
CPT CODE	15839	Excision, excessive skin and su	12	6	\$321.23	\$357.70	\$312.41	\$351.75	\$107.66	\$70.38			✓
CPT CODE	15972	Excision, leg pressure ulcer, wit	13	4	\$350.72	\$361.15	\$353.86	\$354.12	\$76.08	\$28.07			✓
CPT CODE	37735	Ligation and division and compl	9	4	\$423.40	\$475.52	\$399.01	\$479.02	\$81.45	\$25.92			✓
SIMPLE SKIN REPAIR													
CPT CODE	12001	Simple repair of superficial wou	21	6	\$188.42	\$221.93	\$201.66	\$203.91	\$70.50	\$72.83			✓
CPT CODE	12002	Simple repair of superficial wou	20	7	\$196.76	\$204.12	\$203.10	\$186.61	\$63.45	\$56.75			✓
CPT CODE	12031	Layer closure of wounds of scal	14	7	\$223.45	\$225.05	\$246.60	\$208.16	\$76.24	\$47.72			✓
COMPLEX SKIN REPAIR													
CPT CODE	12015	Simple repair or superficial wou	13	5	\$190.98	\$243.25	\$211.09	\$220.38	\$82.87	\$64.03			✓
CPT CODE	12017	Simple repair or superficial wou	13	5	\$194.16	\$278.32	\$160.09	\$258.14	\$91.59	\$48.90	✓		
CPT CODE	12054	Layer closure of wounds of face	13	4	\$248.48	\$256.11	\$275.46	\$240.11	\$103.75	\$56.77			✓

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs												Statistical Significance (90 percent)		
SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference	
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC				
CPT CODE	15822	Blepharoplasty, upper eyelid	13	16	\$251.17	\$252.33	\$239.89	\$243.88	\$77.33	\$82.55			✓	
APG#	12	SKIN & INTEGUMENT GRAFT, TRANSFER & REARRANGEMENT												
CPT CODE	14060	Adjacent tissue transfer or rearran	13	12	\$340.24	\$319.62	\$347.21	\$329.61	\$61.60	\$59.44			✓	
CPT CODE	15100	Split graft, trunk, scalp, arms, le	15	11	\$410.38	\$380.26	\$441.84	\$391.84	\$80.43	\$87.41			✓	
CPT CODE	15260	Full thickness graft, free, includi	14	9	\$376.80	\$370.50	\$372.32	\$373.95	\$64.50	\$58.44			✓	
APG#	27	SIMPLE INCISION & EXCISION OF BREAST											✓	
CPT CODE	19101	Biopsy of breast, incisional	28	16	\$308.04	\$288.59	\$306.92	\$288.61	\$67.15	\$51.69			✓	
CPT CODE	19120	Excision or cyst, fibroadenoma,	31	23	\$274.84	\$262.57	\$275.47	\$262.10	\$47.23	\$60.80				
APG#	28	BREAST RECONSTRUCTION & MASTECTOMY											✓	
CPT CODE	19140	Mastectomy for gynecomastia th	15	12	\$347.87	\$306.75	\$339.76	\$309.53	\$104.05	\$43.46			✓	
CPT CODE	19160	Mastectomy, partial	16	10	\$376.73	\$328.13	\$341.51	\$319.25	\$115.51	\$77.37			✓	
CPT CODE	19182	Mastectomy, subcutaneous	14	7	\$358.19	\$330.48	\$345.65	\$337.44	\$99.87	\$50.71			✓	
APG#	53	OCCUPATIONAL THERAPY												
CPT CODE	97540	Training in activities of daily livin	15	0	\$36.21	N.A.	\$28.97	N.A.	\$21.32	N.A.			N.A.	
CPT CODE	97541	Training in activities of daily livin	11	0	\$18.30	N.A.	\$14.79	N.A.	\$10.33	N.A.			N.A.	
APG#	54	PHYSICAL THERAPY												
CPT CODE	97010	Physical medicine treatment to c	16	0	\$25.51	N.A.	\$24.55	N.A.	\$12.51	N.A.			N.A.	
CPT CODE	97128	Physical medicine treatment to c	15	0	\$29.81	N.A.	\$29.74	N.A.	\$12.15	N.A.			N.A.	
APG#	55	DIAGNOSTIC ARTHROSCOPY											✓	
CPT CODE	29815	Arthroscopy, shoulder, diagnost	16	14	\$458.93	\$761.22	\$426.58	\$402.79	\$139.08	\$1,331.98			✓	
CPT CODE	29870	Arthroscopy, knee, diagnostic, w	19	17	\$429.13	\$413.68	\$412.48	\$410.93	\$115.57	\$79.06				
APG#	56	THERAPEUTIC ARTHROSCOPY											✓	
CPT CODE	29877	Arthroscopy, knee, surgical deb	29	16	\$504.79	\$490.46	\$475.42	\$455.75	\$124.10	\$116.56			✓	
CPT CODE	29881	Arthroscopy, knee, surgical with	30	17	\$540.82	\$451.58	\$496.30	\$439.66	\$163.98	\$92.29	✓			
APG#	57	REPLACEMENT OF CAST											✓	
CPT CODE	29075	Application elbow to finger (shor	14	5	\$168.29	\$185.85	\$171.19	\$179.79	\$109.16	\$79.45			✓	
CPT CODE	29405	Application or short leg cast (bel	8	5	\$212.96	\$193.29	\$147.76	\$179.91	\$151.24	\$64.77			✓	
APG#	58	SPLINT, STRAPPING & CAST REMOVAL											✓	
CPT CODE	29125	Application of short arm splint (f	14	6	\$159.93	\$174.55	\$164.30	\$182.23	\$96.13	\$78.83			✓	
CPT CODE	29580	Strapping unna boot	3	1	\$36.15	\$47.71	\$39.41	N.A.	\$8.12	N.A.			✓	
APG#	59	TREATMENT OF CLOSED FRACTURE & DISLOCATION OF FINGER, TOE & RIB											N.A.	
CPT CODE	21800	Treatment of rib fracture, closed	6	0	\$70.29	N.A.	\$43.55	N.A.	\$66.34	N.A.			✓	
CPT CODE	26720	Treatment of closed phalangeal	15	7	\$139.08	\$153.42	\$156.85	\$147.74	\$71.09	\$48.13			✓	
APG#	60	TREATMENT OF CLOSED FRACTURE & DISLOCATION EXCEPT FINGER, TOE & RIB											✓	
CPT CODE	25600	Treatment of closed distal radial	15	7	\$208.34	\$243.49	\$196.81	\$246.06	\$65.77	\$54.75			✓	
CPT CODE	25605	Treatment of closed distal radial	15	8	\$239.89	\$233.31	\$225.83	\$224.58	\$64.33	\$48.46			✓	
CPT CODE	28470	Treatment of closed metatarsal	10	5	\$135.67	\$162.54	\$138.76	\$152.47	\$74.61	\$82.69			✓	
APG#	62	TREATMENT OF OPEN FRACTURE & DISLOCATION EXCEPT FACE											✓	
CPT CODE	25615	Treatment of open distal radial f	13	4	\$407.36	\$374.72	\$401.34	\$363.92	\$94.97	\$41.73			✓	
CPT CODE	25620	Open treatment of closed or open	15	7	\$393.13	\$369.37	\$394.99	\$378.75	\$92.04	\$62.76			✓	
CPT CODE	26735	Open treatment of closed or open	16	8	\$368.61	\$340.51	\$345.50	\$325.59	\$117.67	\$62.71			✓	
APG#	63	JOINT MANIPULATION UNDER ANESTHESIA												

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	23700 Manipulation under anesthesia, 12 14			\$198.01	\$216.92	\$183.03	\$212.58	\$48.22	\$67.59			✓
CPT CODE	27570 Manipulation of knee joint under 13 11			\$181.31	\$242.10	\$168.72	\$224.26	\$56.86	\$72.94		✓	
APG#	64 SIMPLE MAXILLOFACIAL PROCEDURES											
CPT CODE	30000 Drainage of hematoma, nasal, in 12 5			\$254.06	\$286.46	\$271.77	\$263.86	\$68.63	\$43.42			✓
CPT CODE	30110 Excision, nasal polyp(s), simple 14 7			\$279.41	\$263.93	\$280.86	\$246.15	\$79.30	\$50.24			✓
CPT CODE	30111 Excision, nasal polyp(s), simple 14 6			\$346.94	\$295.78	\$364.36	\$301.61	\$90.19	\$70.60			✓
CPT CODE	31020 Sinusotomy, maxillary (antroto 13 12			\$360.95	\$360.45	\$308.78	\$353.10	\$116.05	\$71.18			✓
APG#	65 COMPLEX MAXILLOFACIAL PROCEDURES											
CPT CODE	30520 Septoplasty or submucous rese 18 21			\$376.07	\$368.39	\$384.91	\$366.02	\$67.64	\$82.29			✓
CPT CODE	30620 Reconstruction, functional, inter 14 13			\$363.03	\$377.10	\$371.87	\$361.75	\$100.83	\$87.17			✓
APG#	66 INCISION OF BONE, JOINT, & TENDON											
CPT CODE	25000 Tendon sheath incision at radial 15 19			\$264.85	\$237.28	\$247.17	\$251.76	\$78.91	\$59.98			✓
CPT CODE	28270 Capsulotomy for contracture; m 16 9			\$312.95	\$262.17	\$283.28	\$262.90	\$107.72	\$37.48			✓
APG#	67 BUNION PROCEDURES											
CPT CODE	28290 Hallux valgus (bunion) correction 16 19			\$347.14	\$327.98	\$311.75	\$315.16	\$128.09	\$81.82			✓
CPT CODE	28292 Hallux valgus (bunion) correction 16 15			\$307.36	\$305.51	\$285.06	\$316.26	\$104.21	\$52.85			✓
APG#	68 EXCISION OF BONE, JOINT & TENDON OF THE HAND & FOOT											
CPT CODE	26160 Excision or lesion of tendon she 19 21			\$221.41	\$210.98	\$210.56	\$214.33	\$70.54	\$50.19			✓
CPT CODE	28080 Excision of interdigital (Morton) 16 18			\$289.20	\$281.89	\$298.78	\$272.35	\$57.34	\$59.71			✓
APG#	69 EXCISION OF BONE, JOINT & TENDON EXCEPT HAND & FOOT											
CPT CODE	24105 Excision, olecranon bursa 14 14			\$321.64	\$281.75	\$286.82	\$296.26	\$98.06	\$49.07			✓
CPT CODE	27345 Excision of synovial cyst of pop 13 12			\$320.21	\$288.46	\$323.15	\$285.06	\$65.97	\$45.26			✓
APG#	70 ARTHROPLASTY											
CPT CODE	25447 Interposition arthroplasty, inter 14 7			\$321.73	\$291.44	\$303.70	\$286.61	\$100.24	\$56.24			✓
CPT CODE	26535 Arthroplasty interphalangeal joint 15 9			\$310.92	\$306.39	\$305.79	\$279.07	\$97.92	\$57.84			✓
APG#	71 HAND & FOOT TENOTOMY											
CPT CODE	26455 Tenotomy, flexor, single, finger 16 12			\$223.96	\$205.79	\$225.85	\$216.34	\$39.65	\$57.33			✓
CPT CODE	28234 Tenotomy, open, extensor, foot 12 7			\$272.05	\$307.43	\$262.94	\$259.27	\$61.21	\$86.81			✓
APG#	72 SIMPLE HAND & FOOT REPAIR EXCEPT TENOTOMY											
CPT CODE	26055 Tendon sheath incision for trigger 28 19			\$232.12	\$211.34	\$219.96	\$207.60	\$57.69	\$40.35			✓
CPT CODE	28285 Hammer toe operation, one tow 24 17			\$411.57	\$300.57	\$412.72	\$308.22	\$86.48	\$53.78	✓		
APG#	73 COMPLEX HAND & FOOT REPAIR											
CPT CODE	26860 Arthrodesis, interphalangeal joint 18 12			\$369.97	\$345.65	\$343.69	\$344.29	\$111.81	\$57.13			✓
CPT CODE	28810 Amputation, metatarsal, with toe 18 8			\$294.53	\$286.17	\$275.18	\$274.64	\$85.80	\$55.27			✓
APG#	74 REPAIR, EXCEPT ARTHROTOMY, OF BONE, JOINT, TENDON EXCEPT OF HAND & FOOT											
CPT CODE	23420 Repair of complete shoulder (ro 11 11			\$476.26	\$470.10	\$485.03	\$446.49	\$130.45	\$99.28			✓
CPT CODE	25260 Repair, tendon or muscle, flexor 14 12			\$316.10	\$304.07	\$298.59	\$287.80	\$86.51	\$74.79			✓
APG#	75 ARTHROTOMY EXCEPT OF HAND & FOOT											
CPT CODE	27332 Arthroto my, knee, for excision of 12 4			\$398.04	\$388.05	\$398.46	\$383.62	\$119.68	\$53.33			✓
CPT CODE	27333 Arthroto my, knee, for excision of 11 4			\$353.18	\$378.68	\$332.97	\$364.96	\$131.12	\$34.73			✓
APG#	76 ARTHROCENTESIS & LIGAMENT OIL, TENDON INJECTION											
CPT CODE	20550 Injection, tendon sheath, ligame 7 9			\$179.28	\$134.03	\$183.66	\$75.17	\$111.36	\$103.18			✓

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	20605 Arthrocentesis, aspiration and/or	12	5	\$224.84	\$230.29	\$235.51	\$246.09	\$78.72	\$90.08			✓
CPT CODE	20610 Arthrocentesis, aspiration and/or	11	5	\$225.01	\$229.30	\$199.03	\$233.13	\$90.25	\$44.28			✓
APG#	77 SPEECH THERAPY											
CPT CODE	92507 Speech, language or hearing th	13	0	\$45.81	N.A.	\$41.36	N.A.	\$28.95	N.A.			N.A.
CPT CODE	92508 Speech, language or hearing th	3	0	\$40.50	N.A.	\$42.03	N.A.	\$6.28	N.A.			N.A.
APG#	79 PULMONARY TEST & THERAPY EXCEPT SPIROMETRY											
CPT CODE	94650 Intermittent positive pressure br	12	0	\$17.32	N.A.	\$15.46	N.A.	\$9.73	N.A.			N.A.
CPT CODE	94760 Noninvasive ear or pulse oximet	16	0	\$10.27	N.A.	\$9.47	N.A.	\$6.43	N.A.			N.A.
APG#	80 NEEDLE & CATHETER BIOPSY, ASPIRATION, LAVAGE & INTUBATION											
CPT CODE	32000 Thoracentesis, puncture or pleu	11	1	\$201.89	\$234.17	\$215.79	N.A.	\$83.23	N.A.			✓
CPT CODE	32405 Biopsy, lung or mediastinum, pe	6	0	\$242.44	N.A.	\$258.29	N.A.	\$76.46	N.A.			N.A.
APG#	81 SIMPLE ENDOSCOPY OF THE UPPER AIRWAY											
CPT CODE	31505 Laryngoscopy, indirect (separat	12	6	\$182.79	\$214.16	\$180.31	\$223.14	\$72.85	\$41.18			✓
CPT CODE	31510 Laryngoscopy, indirect (separat	14	6	\$199.50	\$230.65	\$199.20	\$230.88	\$65.73	\$56.27			✓
APG#	82 COMPLEX ENDOSCOPY OF THE UPPER AIRWAY											
CPT CODE	31535 Laryngoscopy, direct, operative	16	11	\$244.04	\$252.88	\$236.37	\$254.06	\$54.48	\$38.61			✓
CPT CODE	31541 Laryngoscopy, direct, operative	15	10	\$261.24	\$257.74	\$261.10	\$251.38	\$46.87	\$49.59			✓
APG#	83 SIMPLE ENDOSCOPY OF THE LOWER AIRWAY											
CPT CODE	31622 Bronchoscopy diagnostic, (flexib	29	8	\$230.57	\$274.35	\$226.55	\$262.65	\$38.10	\$88.07			✓
CPT CODE	31625 Bronchoscopy with biopsy	30	4	\$235.00	\$255.40	\$224.02	\$257.09	\$53.22	\$76.73			✓
APG#	84 COMPLEX ENDOSCOPY OF THE LOWER AIRWAY											
CPT CODE	31628 Bronchoscopy w/ transbronchia	24	2	\$295.92	\$387.93	\$271.05	\$387.93	\$95.01	\$58.68			✓
CPT CODE	31629 Bronchoscopy with transbronch	9	1	\$295.89	\$355.61	\$313.96	N.A.	\$65.92	N.A.			✓
APG#	85 NASAL CAUTERIZATION & PACKING											
CPT CODE	30901 Control nasal hemorrhage, ante	11	4	\$247.66	\$257.85	\$267.84	\$276.55	\$91.26	\$79.40			✓
CPT CODE	30903 Control nasal hemorrhage, ante	11	5	\$251.76	\$286.01	\$268.22	\$288.27	\$87.80	\$62.78			✓
APG#	86 SIMPLE LIP, MOUTH & SALIVARY GLAND PROCEDURES											
CPT CODE	41110 Excision of lesion of tongue with	12	6	\$266.06	\$241.40	\$265.44	\$249.67	\$54.24	\$25.56			✓
CPT CODE	41112 Excision of lesion of tongue with	13	4	\$290.48	\$236.91	\$279.22	\$247.11	\$94.94	\$26.11			✓
APG#	87 COMPLEX LIP, MOUTH, & SALIVARY GLAND PROCEDURES											
CPT CODE	40500 Vermilionectomy (lip shave), mu	8	4	\$259.24	\$244.94	\$251.74	\$259.15	\$52.75	\$44.68			✓
CPT CODE	42410 Excision of parotid tumor or par	13	5	\$417.18	\$346.72	\$416.08	\$329.88	\$95.62	\$86.19			✓
APG#	88 MISCELLANEOUS SINUS, TRACHEAL & LUNG PROCEDURES											
CPT CODE	31030 Sinusotomy, maxillary (antroto	13	9	\$392.38	\$371.02	\$403.20	\$354.84	\$89.87	\$34.31			✓
CPT CODE	31200 Ethmoidectomy intranasal, ante	12	10	\$362.68	\$359.86	\$381.61	\$357.88	\$71.14	\$56.88			✓
APG#	105 EXERCISE TOLERANCE TESTS											
CPT CODE	93015 Cardiovascular stress test using	12	0	\$47.14	N.A.	\$40.22	N.A.	\$26.96	N.A.			N.A.
CPT CODE	93017 Cardiovascular stress test using	8	0	\$69.37	N.A.	\$37.24	N.A.	\$76.67	N.A.			N.A.
APG#	106 ECHOCARDIOGRAPHY											
CPT CODE	93307 Echocardiography, real-time wi	16	0	\$51.42	N.A.	\$43.57	N.A.	\$31.54	N.A.			N.A.
CPT CODE	93320 Doppler echocardiography, puls	14	0	\$33.16	N.A.	\$34.07	N.A.	\$16.59	N.A.			N.A.
APG#	108 CARDIAC ELECTROPHYSIOLOGIC TESTS											

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	92960 Cardioversion, elective, electric	7	0	\$208.70	N.A.	\$175.33	N.A.	\$218.59	N.A.			N.A.
CPT CODE	93618 Induction of arrhythmia by elect	3	0	\$735.89	N.A.	\$716.43	N.A.	\$291.22	N.A.			N.A.
APG#	109 VASCULAR CANNULATION WITH NEEDLE & CATHETER											✓
CPT CODE	36489 Placement of central venous cat	10	2	\$292.66	\$236.56	\$293.15	\$236.56	\$139.05	\$72.13			
CPT CODE	36860 Cannula declotting without ballo	4	0	\$262.26	N.A.	\$263.45	N.A.	\$73.47	N.A.			N.A.
APG#	110 DIAGNOSTIC CARDIAC CATHETERIZATION											
CPT CODE	93547 Combined left heart catheterizat	10	0	\$720.75	N.A.	\$719.17	N.A.	\$324.05	N.A.			N.A.
CPT CODE	93549 Combined right and left heart ca	10	0	\$843.03	N.A.	\$879.18	N.A.	\$334.18	N.A.			N.A.
APG#	111 ANGIOPLASTY & TRANS-CATHETER PROCEDURES											
CPT CODE	75963 Percutaneous transluminal angi	15	0	\$421.75	N.A.	\$430.64	N.A.	\$223.98	N.A.			N.A.
CPT CODE	92982 Percutaneous transluminal coro	7	0	\$1,444.39	N.A.	\$1,282.91	N.A.	\$635.79	N.A.			N.A.
APG#	112 PACEMAKER INSERTION & REPLACEMENT											
CPT CODE	33212 Insertion or replacement of pac	15	0	\$875.63	N.A.	\$390.46	N.A.	\$1,084.21	N.A.			N.A.
CPT CODE	33219 Repair of pacemaker with repla	13	0	\$557.78	N.A.	\$321.51	N.A.	\$821.02	N.A.			N.A.
APG#	113 REMOVAL & REVISION OF PACEMAKER & VASCULAR DEVICE											
CPT CODE	33216 Insertion, replacement, or repos	11	0	\$768.02	N.A.	\$297.18	N.A.	\$1,103.09	N.A.			N.A.
CPT CODE	36497 Removal of implantable intrave	11	7	\$246.48	\$207.67	\$236.23	\$197.17	\$135.78	\$75.87			✓
APG#	114 MINOR VASCULAR REPAIR & FISTULA CONSTRUCTION											
CPT CODE	35875 Thrombectomy and/or repair of	14	1	\$449.14	\$401.47	\$409.90	N.A.	\$187.00	N.A.			✓
CPT CODE	36495 Insertion of implantable intrave	15	6	\$374.58	\$325.16	\$331.42	\$328.68	\$109.83	\$48.36			✓
APG#	115 SECONDARY VARICOSE VEINS & VASCULAR INJECTION											
CPT CODE	37785 Ligation, division, and/or excisio	17	11	\$376.97	\$393.10	\$370.14	\$393.38	\$67.49	\$75.52			✓
CPT CODE	37799 Unlisted procedure, vascular su	1	1	\$56.55	\$318.43	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	116 VASCULAR LIGATION											
CPT CODE	37618 Ligation, major artery (e.g., post	10	0	\$448.53	N.A.	\$384.77	N.A.	\$294.36	N.A.			N.A.
CPT CODE	37650 Interrupting, partial or complete,	10	0	\$344.69	N.A.	\$345.82	N.A.	\$90.95	N.A.			N.A.
CPT CODE	37720 Ligation and division and compli	14	12	\$364.72	\$338.20	\$358.24	\$354.07	\$84.04	\$61.35			✓
APG#	117 CARDIOPULMONARY RESUSCITATION & INTUBATION											
CPT CODE	31500 Intubation, endotracheal, emerg	7	2	\$107.98	\$132.15	\$103.36	\$132.15	\$48.26	\$67.57			✓
CPT CODE	92950 Cardiopulmonary resuscitation	10	0	\$242.55	N.A.	\$223.55	N.A.	\$156.91	N.A.			N.A.
APG#	131 CHEMOTHERAPY BY INFUSION											
CPT CODE	96501 Chemotherapy injection, intrave	7	0	\$664.94	N.A.	\$388.41	N.A.	\$681.74	N.A.			N.A.
CPT CODE	96509 Chemotherapy injection, intrave	7	0	\$685.82	N.A.	\$490.82	N.A.	\$829.09	N.A.			N.A.
CPT CODE	96510 Chemotherapy inject, iv, comple	4	0	\$402.09	N.A.	\$341.23	N.A.	\$337.07	N.A.			N.A.
APG#	132 CHEMOTHERAPY EXCEPT BY INFUSION											
CPT CODE	96500 Chemotherapy injection, intrave	8	0	\$190.74	N.A.	\$100.26	N.A.	\$188.37	N.A.			N.A.
CPT CODE	96549 Unlisted chemotherapy procedu	1	0	\$19.37	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	133 TRANSFUSION & PLEBOTOMY											
CPT CODE	36430 Transfusion, blood or blood com	8	1	\$80.74	\$55.23	\$74.03	N.A.	\$32.47	N.A.			✓
CPT CODE	36440 Push transfusion, blood, 2 years	2	0	\$109.07	N.A.	\$109.07	N.A.	\$16.31	N.A.			N.A.
APG#	135 DEEP LYMPH STRUCTURE & THYROID PROCEDURES											
CPT CODE	38510 Biopsy or excision of lymph nod	16	13	\$290.25	\$272.68	\$292.13	\$273.50	\$63.20	\$59.11			✓

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	38525 Biopsy or excision of lymph node	16	12	\$278.81	\$299.41	\$269.46	\$320.80	\$76.59	\$64.08			✓
APG#	157 ALIMENTARY TESTS AND SIMPLE TUBE PLACEMENT											
CPT CODE	91010 Esophageal motility study	3	0	\$92.48	N.A.	\$89.39	N.A.	\$16.34	N.A.			N.A.
CPT CODE	91030 Esophagus, acid perfusion (Barium)	2	0	\$73.31	N.A.	\$73.31	N.A.	\$20.10	N.A.			N.A.
APG#	158 ESOPHAGEAL DILATION WITHOUT ENDOSCOPY											
CPT CODE	43450 Dilation of esophagus, by unguitomy	24	5	\$155.12	\$216.73	\$147.39	\$218.88	\$50.24	\$112.18			✓
CPT CODE	43451 Dilation of esophagus, by unguitomy	20	6	\$158.11	\$226.84	\$149.64	\$214.71	\$46.52	\$109.85			✓
APG#	159 PERCUTANEOUS & OTHER SIMPLE GASTROINTESTINAL BIOPSY											
CPT CODE	47000 Biopsy of liver, percutaneous needle	9	2	\$231.16	\$176.96	\$219.72	\$176.96	\$74.37	\$113.82			✓
CPT CODE	49180 Biopsy, abdominal or retroperitoneal	6	2	\$134.31	\$208.90	\$116.31	\$208.90	\$90.02	\$76.23			✓
CPT CODE	91000 Esophageal intubation and collar	2	0	\$88.36	N.A.	\$88.36	N.A.	\$21.43	N.A.			N.A.
APG#	160 ANOSCOPY WITH BIOPSY & DIAGNOSTIC PROCTOSIGMOIDOSCOPY											
CPT CODE	45300 Proctosigmoidoscopy diagnostic	10	4	\$124.43	\$135.36	\$107.11	\$142.30	\$63.74	\$59.26			✓
CPT CODE	45330 Sigmoidoscopy, flexible fiberoptic	25	13	\$113.77	\$155.47	\$103.84	\$159.66	\$39.64	\$51.89		✓	
CPT CODE	46610 Anoscopy for removal of polyp	12	5	\$119.70	\$136.87	\$90.68	\$141.36	\$81.11	\$31.68			✓
APG#	161 PROCTOSIGMOIDOSCOPY WITH EXCISION OR BIOPSY											
CPT CODE	45331 Sigmoidoscopy, flexible fiberoptic	23	10	\$126.78	\$177.80	\$103.64	\$159.31	\$53.01	\$67.93		✓	
CPT CODE	45333 Sigmoidoscopy, flexible fiberoptic	23	8	\$128.68	\$184.92	\$120.12	\$165.43	\$52.38	\$53.45		✓	
APG#	162 DIAGNOSTIC UPPER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	43235 Upper GI endoscopy including esoph	24	12	\$195.44	\$203.37	\$187.26	\$186.31	\$28.84	\$69.08			✓
CPT CODE	43239 Upper GI endoscopy incl. esoph	27	13	\$214.74	\$203.06	\$210.26	\$186.82	\$43.06	\$65.34			✓
APG#	163 THERAPEUTIC UPPER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	43245 Upper GI endoscopy including esoph	13	5	\$197.99	\$255.12	\$204.78	\$214.59	\$46.93	\$77.60			✓
CPT CODE	43246 Upper GI endoscopy including esoph	14	5	\$289.08	\$276.53	\$317.76	\$269.18	\$90.72	\$91.39			✓
APG#	164 DIAGNOSTIC LOWER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	45378 Colonoscopy, fiberoptic, beyond cecum	27	13	\$185.61	\$178.69	\$188.66	\$167.23	\$45.60	\$43.46			✓
CPT CODE	45380 Colonoscopy, fiberoptic, beyond cecum	27	14	\$209.39	\$220.15	\$192.18	\$212.54	\$46.28	\$58.88			✓
APG#	165 THERAPEUTIC LOWER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	45383 Colonoscopy, fiberoptic, beyond cecum	12	8	\$225.92	\$245.00	\$224.60	\$236.30	\$35.48	\$86.84			✓
CPT CODE	45385 Colonoscopy, fiberoptic, beyond cecum	25	15	\$209.65	\$212.40	\$198.04	\$194.95	\$42.34	\$53.19			✓
APG#	166 ERCP & OTHER MISC. GASTROINTESTINAL ENDOSCOPY PROCEDURES											
CPT CODE	43260 Endoscopic retrograde cholangiopancreatography	13	0	\$514.74	N.A.	\$409.38	N.A.	\$302.90	N.A.			N.A.
CPT CODE	44360 Small intestinal endoscopy beyond ileocecal junction	9	3	\$186.18	\$131.10	\$179.41	\$159.00	\$56.26	\$51.62			✓
APG#	167 TONSIL & ADENOID PROCEDURES											
CPT CODE	42821 Tonsillectomy and adenoidectomy	26	17	\$309.76	\$327.73	\$287.48	\$334.81	\$70.38	\$77.43			✓
CPT CODE	42826 Tonsillectomy, primary or second	25	15	\$327.35	\$330.78	\$322.90	\$332.61	\$64.03	\$76.97			✓
APG#	168 HERNIA & HYDROCELE PROCEDURES											
CPT CODE	49505 Repair inguinal hernia, age 5 or older	27	20	\$329.46	\$346.53	\$332.78	\$338.03	\$57.61	\$54.67			✓
CPT CODE	49520 Repair inguinal hernia, any age	26	16	\$381.70	\$397.71	\$380.75	\$403.49	\$78.42	\$96.00			✓
APG#	169 SIMPLE HEMORRHOID PROCEDURES											
CPT CODE	46230 Excision of external hemorrhoid	11	12	\$243.48	\$275.17	\$260.56	\$278.02	\$90.60	\$60.58			✓
CPT CODE	46934 Description of Hemorrhoids, any	11	10	\$266.78	\$259.83	\$272.50	\$273.07	\$113.99	\$57.90			✓

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCS											Statistical Significance (90 percent)		
SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
SIMPLE ANAL & RECTAL PROCEDURES EXCEPT HEMORRHOID PROCEDURES													
APG#	170												✓
CPT CODE	45915	Removal of fecal impaction or fd	5	2	\$197.37	\$197.02	\$189.30	\$197.02	\$73.59	\$70.33			✓
CPT CODE	46200	Fissurectomy, with or without sp	13	13	\$265.13	\$256.35	\$272.50	\$257.67	\$57.84	\$51.36			
COMPLEX ANAL & RECTAL PROCEDURES													
APG#	171												✓
CPT CODE	45170	Excision of Rectal tumor, transa	11	7	\$307.52	\$270.21	\$301.32	\$298.57	\$82.36	\$58.53			✓
CPT CODE	46255	Hemorrhoidectomy internal and	14	15	\$286.71	\$252.69	\$275.99	\$267.22	\$119.75	\$47.50			
PERITONEAL PROCEDURES & CHANGE OF INTRA-ABDOMINAL TUBE													
APG#	172												✓
CPT CODE	43760	Change of gastrostomy tube	12	3	\$150.51	\$141.73	\$116.52	\$109.60	\$108.13	\$68.40			✓
CPT CODE	49080	Peritoneoecstesis, abdominal pi	10	1	\$293.63	\$148.07	\$284.41	N.A.	\$176.15	N.A.			
MISC. DIGESTIVE PROCEDURES													
APG#	173												✓
CPT CODE	43750	Percutaneous placement of gas	9	3	\$248.70	\$312.62	\$293.44	\$305.66	\$95.38	\$68.26			✓
CPT CODE	49421	Insertion of intraperitoneal cann	6	0	\$311.44	N.A.	\$307.76	N.A.	\$105.62	N.A.			N.A.
SIMPLE URINARY STUDIES & PROCEDURES													
APG#	183											✓	
CPT CODE	51720	Bladder instillation of anticarci	6	1	\$139.50	\$329.09	\$127.27	N.A.	\$51.77	N.A.			
CPT CODE	51725	Simple cystometrogram (CMG)	7	0	\$121.53	N.A.	\$133.38	N.A.	\$45.46	N.A.			N.A.
CPT CODE	51736	Simple uroflowmetry (UFR) (e.g	3	0	\$49.65	N.A.	\$46.34	N.A.	\$24.04	N.A.			N.A.
RENAL EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY													
APG#	184												✓
CPT CODE	50590	Lithotripsy, extracorporeal shock	5	2	\$129.77	\$264.19	\$96.78	\$129.77	\$139.17	\$110.22			
URINARY CATHETERIZATION & DILATION													
APG#	185												✓
CPT CODE	51010	Aspiration of bladder; by trocar	9	1	\$257.42	\$378.04	\$241.79	N.A.	\$84.37	N.A.			✓
CPT CODE	53660	Dilation of female urethra includ	9	3	\$240.84	\$235.44	\$212.60	\$237.61	\$67.92	\$29.03			✓
CPT CODE	53670	Catheterization, urethra simple	8	3	\$49.43	\$33.09	\$42.78	\$19.99	\$31.26	\$26.38			
HEMODIALYSIS													
APG#	186												N.A.
CPT CODE	90935	Hemodialysis procedure with sir	5	0	\$309.88	N.A.	\$256.40	N.A.	\$192.94	N.A.			N.A.
CPT CODE	90937	Hemodialysis procedure requir	2	0	\$239.73	N.A.	\$239.73	N.A.	\$19.76	N.A.			N.A.
PERITONEAL DIALYSIS													
APG#	187												N.A.
CPT CODE	90945	Dialysis procedure other than he	4	0	\$290.62	N.A.	\$293.65	N.A.	\$255.66	N.A.			N.A.
CPT CODE	90947	Dialysis procedure other than he	1	0	\$448.05	N.A.	N.A.	N.A.	N.A.	N.A.			
SIMPLE CYSTOURETHROSCOPY													
APG#	188												✓
CPT CODE	52000	Cystourethroscopy (separate pr	26	14	\$261.84	\$256.23	\$260.84	\$253.34	\$57.61	\$65.54			✓
CPT CODE	52281	Cystourethroscopy, with calibrat	23	8	\$314.72	\$287.88	\$286.43	\$298.34	\$96.75	\$23.37			
COMPLEX CYSTOURETHROSCOPY & LITHOLAPAXY													
APG#	189												✓
CPT CODE	52224	Cystourethroscopy, w/ fulguratio	14	7	\$253.46	\$279.66	\$241.03	\$280.94	\$56.34	\$55.46	✓		
CPT CODE	52234	Cystourethroscopy, w/fulguratio	22	6	\$316.39	\$247.33	\$292.33	\$252.46	\$79.48	\$45.06			
PERCUTANEOUS RENAL ENDOSCOPY, CATHETERIZATION & URETERAL END													
APG#	190												N.A.
CPT CODE	50392	Introduction of intracatheter or c	5	0	\$375.66	N.A.	\$413.27	N.A.	\$118.72	N.A.			N.A.
CPT CODE	50393	Introduction of ureteral catheter	10	0	\$393.75	N.A.	\$369.26	N.A.	\$122.31	N.A.			✓
CPT CODE	50953	Ureteral endoscopy through est	8	1	\$383.58	\$382.06	\$346.55	N.A.	\$123.15	N.A.			
CYSTOTOMY													
APG#	191												✓
CPT CODE	51020	Cystotomy or cystostomy; with f	7	1	\$245.76	\$310.38	\$246.13	N.A.	\$134.70	N.A.			✓
CPT CODE	51040	Cystostomy; cystostomy with dra	3	2	\$219.28	\$321.60	\$217.77	\$321.60	\$30.43	\$120.81			✓
CPT CODE	51045	Cystostomy with insertion of urete	9	2	\$310.97	\$333.15	\$347.34	\$333.15	\$69.63	\$35.68			

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGICAL PROCEDURES, 2015-2016											Statistical Significance (90 percent)		
SURGICAL PROCEDURES	APG#	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
SIMPLE URETHRAL PROCEDURES													
APG#	192												
CPT CODE	53200	Biopsy of urethra	12	4	\$266.33	\$262.11	\$249.58	\$249.75	\$67.11	\$77.17			✓
CPT CODE	53265	Excision or fulguration: urethral	13	4	\$270.02	\$283.11	\$262.44	\$279.83	\$56.61	\$77.45			✓
COMPLEX URETHRAL PROCEDURES													
APG#	193												
CPT CODE	53220	Excision or fulguration of carcin	11	2	\$267.15	\$285.27	\$251.87	\$285.27	\$52.61	\$50.45			✓
CPT CODE	53235	Excision of urethral diverticulum	11	1	\$261.89	\$321.18	\$266.36	N.A.	\$37.80	N.A.			✓
TESTICULAR EPIDIDYMAL PROCEDURES													
APG#	209												
CPT CODE	54520	Orchiectomy, simple, w/ or w/o	15	13	\$343.36	\$289.82	\$325.75	\$304.73	\$145.56	\$62.15			✓
CPT CODE	54521	Orchiectomy, simple w/ or w/o t	13	6	\$403.43	\$315.36	\$307.18	\$304.11	\$275.85	\$49.22			✓
INSERTION OF PENILE PROSTHESIS													
APG#	210												
CPT CODE	54400	Insertion of penile prosthesis; n	7	3	\$515.14	\$824.33	\$542.39	\$356.77	\$151.51	\$870.94			✓
CPT CODE	54405	Insertion of inflatable (multi-com	6	4	\$429.79	\$1,504.24	\$451.74	\$1,138.32	\$84.63	\$1,445.85			✓
COMPLEX PENILE PROCEDURES													
APG#	211												
CPT CODE	54402	Removal or replacement of non	6	0	\$411.71	N.A.	\$373.52	N.A.	\$104.80	N.A.			N.A.
CPT CODE	54407	Removal, repair or replacement	6	3	\$350.91	\$1,286.04	\$335.80	\$488.64	\$97.22	\$1,539.36			✓
SIMPLE PENILE PROCEDURES													
APG#	212												
CPT CODE	54152	Circumcision, clamp procedure	6	7	\$277.34	\$235.28	\$287.66	\$256.96	\$57.31	\$78.73			✓
CPT CODE	54161	Circumcision, surgical excision	17	16	\$272.50	\$261.65	\$264.44	\$259.56	\$60.59	\$48.03			✓
PROSTATE NEEDLE & PUNCH BIOPSY													
APG#	213												
CPT CODE	55700	Biopsy, prostate needle or punc	24	6	\$226.16	\$221.16	\$220.04	\$215.86	\$65.73	\$71.01			✓
CPT CODE	55705	Biopsy, prostate incisional, any	12	6	\$254.03	\$254.64	\$265.12	\$247.65	\$49.24	\$57.11			✓
TRANSURETHRAL RESECTION OF PROSTATE & OTHER PROSTATE PROCEDURE													
APG#	214												
CPT CODE	52500	Transurethral resection of blad	16	5	\$286.77	\$272.20	\$272.14	\$269.38	\$74.66	\$68.10			✓
CPT CODE	52601	Transurethral resection or prost	13	1	\$315.59	\$382.00	\$335.81	N.A.	\$87.94	N.A.			✓
TREATMENT OF SPONTANEOUS ABORTION													
APG#	237												
CPT CODE	59801	Treatment of spontaneous abor	10	9	\$205.52	\$189.91	\$187.28	\$180.67	\$57.88	\$48.30			✓
CPT CODE	59820	Treatment of missed abortion, f	13	15	\$221.66	\$207.73	\$206.73	\$212.43	\$40.97	\$39.76			✓
THERAPEUTIC ABORTION													
APG#	238												
CPT CODE	59840	Legal (therapeutic) abortion, by	9	7	\$230.33	\$161.38	\$201.58	\$175.90	\$63.17	\$32.49	✓		✓
CPT CODE	59841	Legal (therapeutic) abortion, by	6	6	\$207.61	\$180.93	\$203.73	\$186.83	\$28.11	\$38.12			✓
FEMALE GENITAL ENDOSCOPY													
APG#	240												
CPT CODE	58980	Laparoscopy for visualization of	21	19	\$395.50	\$380.13	\$371.50	\$340.31	\$126.16	\$118.99			✓
CPT CODE	58985	Laparoscopy for visualization of	18	17	\$409.93	\$444.17	\$374.44	\$396.91	\$116.70	\$208.27			✓
COLPOSCOPY													
APG#	241												
CPT CODE	57452	Colposcopy (vaginocopy); (sep	8	9	\$210.77	\$197.74	\$203.46	\$171.00	\$27.98	\$65.73			✓
CPT CODE	57454	Colposcopy (vaginocopy); with	11	6	\$240.20	\$211.76		\$228.54	\$210.91	\$54.75	\$83.95		✓
MISC. FEMALE REPRODUCTIVE PROCEDURES													
APG#	242												
CPT CODE	56600	Biopsy of vulva (separate proc	15	13	\$263.13	\$243.41	\$257.41	\$249.36	\$39.56	\$39.05			✓
CPT CODE	57520	Biopsy of cervix, circumferenti	17	21	\$262.97	\$255.11	\$263.93	\$260.49	\$51.78	\$39.95			✓
DILATION & CURETTAGE													
APG#	243												
CPT CODE	57820	Dilation and curettage of cervi	24	3	\$231.77	\$213.99	\$215.27	\$215.68	\$42.95	\$26.80			✓
CPT CODE	58120	Dilation and curettage, diagnost	23	16	\$260.52	\$225.74	\$273.33	\$215.21	\$50.36	\$65.22	✓		

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical	Significance	(90 percent)
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
APG#	244	FEMALE GENITAL EXCISION & REPAIR											
CPT CODE	56620	Vulvectomy, partial, unilateral or	9	7	\$324.63	\$291.87	\$345.48	\$300.11	\$59.08	\$69.35			✓
CPT CODE	57135	Excision of vaginal cyst or tumor	14	12	\$277.01	\$254.78	\$280.99	\$247.98	\$42.29	\$41.76			✓
APG#	261	ELECTROENCEPHALOGRAM											
CPT CODE	95819	Electroencephalogram (EEG) in	16	0	\$54.69	N.A.	\$54.98	N.A.	\$18.82	N.A.			N.A.
CPT CODE	95828	Polysomnography (recording, at	6	0	\$417.62	N.A.	\$445.91	N.A.	\$102.75	N.A.			N.A.
APG#	263	NERVE & MUSCLE TESTS											
CPT CODE	95900	Nerve conduction, velocity and/or	4	0	\$4.18	N.A.	\$2.10	N.A.	\$5.14	N.A.			N.A.
CPT CODE	95904	Nerve conduction, velocity and/or	7	0	\$15.36	N.A.	\$12.39	N.A.	\$16.40	N.A.			N.A.
APG#	264	INJECTION OF SUBSTANCE INTO SPINAL CORD											
CPT CODE	62278	Injection of anesthetic substance	7	7	\$148.61	\$78.72	\$142.63	\$70.70	\$62.56	\$27.85	✓		
CPT CODE	62289	Injection of substance other than	3	6	\$131.77	\$98.11	\$140.45	\$96.90	\$50.71	\$30.17			✓
APG#	266	NERVE INJECTION & STIMULATION											
CPT CODE	64510	Injection, anesthetic agent, stellate	4	9	\$124.76	\$72.40	\$127.19	\$66.16	\$53.26	\$27.02			✓
CPT CODE	64520	Injection, anesthetic agent, lumbar	7	5	\$172.22	\$96.56	\$147.50	\$102.02	\$105.71	\$56.72			✓
APG#	267	REVISION & REMOVAL OF NEUROLOGICAL DEVICE											
CPT CODE	63660	Revision or removal of spinal ne	3	1	\$390.51	\$230.43	\$324.70	N.A.	\$124.70	N.A.			✓
CPT CODE	63688	Revision or removal of spinal ne	4	1	\$346.36	\$267.44	\$317.94	N.A.	\$134.46	N.A.			✓
APG#	269	CARPAL TUNNEL RELEASE											
CPT CODE	64721	Neuroplasty and/or transposition	24	20	\$263.82	\$234.91	\$256.16	\$233.11	\$51.89	\$56.01	✓		
APG#	270	NERVE REPAIR & DESTRUCTION											
CPT CODE	64718	Neuroplasty and/or transposition	13	12	\$306.31	\$296.36	\$294.08	\$294.82	\$60.72	\$105.31			✓
CPT CODE	64719	Neuroplasty and/or transposition	13	11	\$320.50	\$255.58	\$280.05	\$246.74	\$127.62	\$82.66			✓
APG#	271	COMPLEX NERVE REPAIR											
CPT CODE	64831	Suture of digital nerve, hand or f	11	7	\$339.32	\$280.75	\$321.78	\$292.31	\$109.80	\$90.15			✓
CPT CODE	64834	Suture of one nerve, hand or f	9	6	\$306.81	\$303.41	\$296.68	\$280.93	\$61.96	\$59.04			✓
APG#	272	SPINAL TAP											
CPT CODE	62270	Spinal puncture, lumbar, diagno	9	0	\$108.51	N.A.	\$96.12	N.A.	\$55.06	N.A.			N.A.
CPT CODE	62272	Spinal puncture, therapeutic, for	3	0	\$122.31	N.A.	\$80.23	N.A.	\$88.81	N.A.			N.A.
APG#	289	SIMPLE LASER EYE PROCEDURES											
CPT CODE	65855	Trabeculoplasty by laser surger	10	3	\$183.27	\$52.43	\$190.09	\$46.74	\$65.31	\$20.47	✓		
CPT CODE	66821	Dissection of secondary membra	12	12	\$456.59	\$221.24	\$501.10	\$183.04	\$108.86	\$169.19	✓		
APG#	290	COMPLEX LASER EYE PROCEDURES											
CPT CODE	67105	Repair of retinal detachment, on	4	4	\$526.23	\$213.92	\$418.60	\$192.71	\$490.27	\$168.10			✓
CPT CODE	67228	Destruction of extensive or prog	4	3	\$180.37	\$34.54	\$95.52	\$42.97	\$198.58	\$19.46			✓
APG#	291	CATARACT PROCEDURES											
CPT CODE	66850	Removal of lens material, phaco	19	9	\$304.16	\$349.49	\$275.59	\$330.66	\$136.50	\$104.89			✓
CPT CODE	66940	Extraction of lens with or without	16	10	\$334.11	\$408.71	\$248.26	\$362.48	\$229.72	\$167.06			✓
CPT CODE	66983	Intracapsular cataract extraction	18	10	\$617.00	\$565.46	\$646.21	\$552.09	\$126.92	\$157.66			✓
CPT CODE	66984	Extracapsular cataract removal	22	23	\$641.57	\$548.54	\$648.20	\$572.38	\$176.78	\$149.19			✓
CPT CODE	66985	Insertion of intraocular lens sub	20	18	\$514.77	\$504.00	\$500.81	\$510.63	\$79.87	\$158.30			✓
APG#	292	SIMPLE ANTERIOR SEGMENT EYE PROCEDURES FOR GLAUCOMA											

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	66500 Iridotomy by stab incision (sepa	5	4	\$261.44	\$214.27	\$264.45	\$217.02	\$75.00	\$50.32			✓
CPT CODE	66720 Cyclotherapy initial	2	5	\$220.06	\$141.18	\$220.06	\$132.79	\$44.11	\$84.04			✓
APG#	293 COMPLEX ANTERIOR SEGMENT EYE PROCEDURES FOR GLAUCOMA											
CPT CODE	66150 Fertilization of sclera for glauco	3	3	\$265.52	\$225.53	\$278.58	\$270.07	\$51.81	\$102.75			✓
CPT CODE	66170 Fertilization of sclera for glauco	7	10	\$291.44	\$318.87	\$324.86	\$65.71	\$111.11				✓
APG#	294 SIMPLE ANTERIOR SEGMENT EYE PROCEDURES EXCEPT FOR GLAUCOMA											
CPT CODE	65450 Destruction of lesion of cornea c	3	4	\$150.79	\$148.22	\$167.83	\$140.21	\$38.82	\$49.28			✓
CPT CODE	66820 Discussion or secondary membl	5	4	\$425.29	\$280.93	\$358.64	\$313.20	\$277.85	\$126.67			✓
APG#	295 MODERATE ANTERIOR SEGMENT EYE PROCEDURES											
CPT CODE	66625 Iridectomy, w/corneoscleral or c	4	10	\$262.88	\$202.15	\$262.11	\$235.13	\$68.99	\$88.28			✓
CPT CODE	66830 Removal of secondary membra	8	1	\$394.89	\$475.07	\$305.41	N.A.	\$225.62	N.A.			✓
APG#	296 COMPLEX ANTERIOR SEGMENT EYE PROCEDURES EXCEPT FOR GLAUCOMA											
CPT CODE	65750 Keratoplasty, penetrating, includ	2	12	\$164.71	\$505.27	\$164.71	\$431.15	\$6.52	\$278.14			✓
CPT CODE	67010 Removal of vitreous, anterior ap	10	8	\$360.29	\$326.36	\$377.28	\$313.21	\$108.71	\$134.14			✓
APG#	297 SIMPLE POSTERIOR SEGMENT EYE PROCEDURES											
CPT CODE	67208 Destruction of localized lesion o	3	0	\$270.18	N.A.	\$238.23	N.A.	\$192.37	N.A.			N.A.
CPT CODE	67227 Destruction of extensive or prog	2	2	\$291.04	\$115.85	\$291.04	\$115.85	\$262.32	\$100.46			✓
APG#	298 COMPLEX POSTERIOR SEGMENT EYE PROCEDURES											
CPT CODE	67036 Vitrectomy, mechanical, pars pla	6	8	\$473.82	\$402.25	\$369.55	\$395.12	\$274.47	\$146.31			✓
CPT CODE	67101 Repair of retinal detachment, on	3	3	\$473.00	\$421.65	\$476.53	\$239.19	\$110.62	\$418.58			✓
APG#	299 STRABISMUS & MUSCLE EYE PROCEDURES											
CPT CODE	67311 Strabismus surgery on patient n	9	16	\$328.50	\$251.36	\$305.92	\$266.41	\$83.55	\$86.01	✓		
CPT CODE	67312 Strabismus surgery on patient n	9	20	\$300.42	\$260.54	\$275.71	\$268.48	\$58.45	\$70.09			✓
APG#	300 SIMPLE REPAIR & PLASTIC PROCEDURES OF EYE											
CPT CODE	67840 Excision of lesion of eye lid with	8	12	\$260.58	\$163.99	\$255.92	\$174.12	\$27.95	\$60.88	✓		
CPT CODE	67921 Repair of entropion sutur	10	14	\$242.19	\$209.15	\$237.87	\$224.56	\$58.30	\$72.82			✓
APG#	301 COMPLEX REPAIR & PLASTIC PROCEDURES OF EYE											
CPT CODE	67904 Repair of blepharoptosis (tars)	9	15	\$263.34	\$235.84	\$264.17	\$258.00	\$50.67	\$104.25			✓
CPT CODE	68720 Dacryocystorhinostomy (fistuliz	9	11	\$477.32	\$350.34	\$470.65	\$325.19	\$118.65	\$87.52	✓		
APG#	313 OTORHINOLARYNGOLOGIC FUNCTION TESTS											
CPT CODE	92545 Oscillating tracking test, with re	1	0	\$55.35	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
CPT CODE	92585 Brainstem evoked response rec	7	0	\$52.77	N.A.	\$50.76	N.A.	\$35.86	N.A.			N.A.
APG#	314 MAJOR EXTERNAL EAR PROCEDURES											
CPT CODE	69140 Excision exostosis (es), external	6	3	\$321.62	\$343.73	\$321.22	\$366.82	\$60.34	\$68.78			✓
CPT CODE	69310 Reconstruction of external aud	7	2	\$354.40	\$372.21	\$356.98	\$372.21	\$110.28	\$21.55			✓
APG#	315 TYMPANOSTOMY & OTHER SIMPLE MIDDLE EAR PROCEDURES											
CPT CODE	69420 Myringotomy including aspiratio	13	11	\$215.14	\$207.14	\$208.31	\$203.93	\$58.74	\$60.20			✓
CPT CODE	69433 Tympanostomy (requiring insert	9	11	\$176.62	\$169.63	\$184.60	\$159.04	\$55.68	\$59.49			✓
APG#	316 TYMPANOPLASTY & OTHER COMPLEX MIDDLE EAR PROCEDURES											
CPT CODE	69631 Tympanoplasty w/o mastoidect	11	8	\$370.02	\$331.14	\$400.43	\$326.01	\$68.72	\$75.13			✓
CPT CODE	69660 Stapedectomy with re-establish	8	4	\$428.17	\$435.93	\$419.38	\$437.72	\$112.08	\$75.89			✓
APG#	318 SIMPLE AUDIOMETRY											

TOTAL DIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs												
SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	92557 Basic comprehensive audiometry	5	0	\$47.17	N.A.	\$47.86	N.A.	\$17.19	N.A.			N.A.
CPT CODE	92567 Tympanometry	5	0	\$17.41	N.A.	\$11.31	N.A.	\$15.44	N.A.			N.A.
APG#	319 REMOVAL OF IMPACTED CERUMEN											
CPT CODE	69210 Removal impacted cerumen (se	6	5	\$145.41	\$167.77	\$157.46	\$150.05	\$78.51	\$68.09			✓
AGGREGATE MEAN FOR ALL SURGICAL PROCEDURES		3654	2002	\$281.11	\$284.90	\$253.82	\$266.60	\$202.46	\$194.69			✓

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG#	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
APG#	2	SUPERFICIAL NEEDLE BIOPSY & ASPIRATION											
CPT CODE	19000	Puncture aspiration of cyst of br	10	5	\$107.41	\$119.85	\$112.66	\$71.70	\$52.88	\$97.87			✓
CPT CODE	19100	Biopsy of breast, needle (separa	6	7	\$220.36	\$252.69	\$173.60	\$258.46	\$114.32	\$202.85			✓
CPT CODE	60100	Biopsy, thyroid, percutaneous m	2	1	\$112.14	\$358.83	\$112.14	N.A.	\$7.86	N.A.		✓	
APG#	3	SIMPLE INCISION & DRAINAGE											
CPT CODE	10000	Incision and drainage of infecte	17	7	\$142.00	\$173.19	\$108.80	\$106.67	\$95.63	\$128.95			✓
CPT CODE	10060	Incision and drainage of abscess	19	11	\$157.67	\$225.57	\$124.18	\$106.67	\$90.24	\$287.81			✓
CPT CODE	10120	Incision & removal of foreign bo	17	15	\$151.92	\$198.34	\$114.01	\$189.06	\$100.95	\$134.97			✓
APG#	4	COMPLEX INCISION AND DRAINAGE											
CPT CODE	10141	Incision and drainage of hemat	15	11	\$238.98	\$308.58	\$171.64	\$281.59	\$171.86	\$203.79			✓
CPT CODE	10180	Incision and drainage, complex,	15	9	\$241.28	\$323.11	\$185.70	\$316.47	\$145.96	\$232.90			✓
CPT CODE	23931	Incision and drainage, upper arm	11	5	\$257.51	\$199.53	\$177.04	\$144.55	\$223.64	\$176.13			✓
CPT CODE	28002	Deep dissection below fascia, f	10	4	\$165.29	\$184.86	\$124.50	\$112.42	\$86.13	\$180.72			✓
APG#	5	COMPLEX INCISION AND DRAINAGE											
CPT CODE	11700	Debridement of nails, manual; fl	14	6	\$108.98	\$144.50	\$98.60	\$142.33	\$49.73	\$96.31			✓
CPT CODE	11701	Debridement of nails, manual; e	15	6	\$135.72	\$176.29	\$112.00	\$170.89	\$85.57	\$116.95			✓
APG#	6	SIMPLE DEBRIDEMENT & DESTRUCTION											
CPT CODE	11040	Debridement of skin, partial thic	14	10	\$171.94	\$213.39	\$117.09	\$186.94	\$137.06	\$151.45			✓
CPT CODE	11730	Avulsion of nail plate, partial or	16	10	\$139.09	\$143.81	\$84.83	\$121.62	\$170.59	\$99.93			✓
CPT CODE	17000	Destruction by any method, with	10	9	\$162.32	\$279.99	\$148.74	\$207.54	\$79.55	\$271.60			✓
CPT CODE	20670	Removal of implant; superficial,	17	15	\$252.66	\$298.62	\$204.42	\$232.62	\$171.83	\$208.17			✓
APG#	7	SIMPLE EXCISION & BIOPSY											
CPT CODE	11401	Excision, benign lesion, except	24	13	\$157.37	\$216.89	\$142.84	\$207.54	\$98.53	\$134.27			✓
CPT CODE	11440	Excision, other benign lesion (ul	26	16	\$183.69	\$232.09	\$178.04	\$235.11	\$105.84	\$124.85			✓
CPT CODE	11601	Excision, malignant lesion; trunk	25	12	\$160.91	\$199.46	\$167.98	\$213.12	\$92.39	\$104.56			✓
CPT CODE	11642	Excision, malignant lesion, face	26	15	\$183.04	\$218.92	\$178.51	\$221.75	\$104.34	\$109.82			✓
APG#	8	COMPLEX EXCISION, BIOPSY & DEBRIDEMENT											
CPT CODE	11404	Excision, benign lesion, except	17	18	\$184.34	\$229.46	\$170.55	\$210.20	\$124.52	\$161.81			✓
CPT CODE	11406	Excision, benign lesion, except	18	19	\$172.89	\$249.68	\$159.75	\$258.46	\$91.33	\$142.78		✓	
CPT CODE	11643	Excision, malignant lesion, face	16	12	\$196.27	\$209.43	\$179.47	\$217.57	\$110.03	\$117.57			✓
APG#	9	LIPECTOMY & EXCISION WITH RECONSTRUCTION											
CPT CODE	15839	Excision, excessive skin and su	12	6	\$244.47	\$389.37	\$228.24	\$417.46	\$120.32	\$193.43			✓
CPT CODE	15972	Excision, leg pressure ulcer, wit	13	4	\$413.50	\$276.09	\$295.71	\$236.93	\$334.95	\$150.21			✓
CPT CODE	37735	Ligation and division and compl	9	4	\$443.06	\$410.32	\$481.34	\$308.82	\$188.47	\$290.14			✓
APG#	10	SIMPLE SKIN REPAIR											
CPT CODE	12001	Simple repair of superficial wou	21	6	\$144.09	\$223.90	\$117.70	\$188.46	\$87.68	\$174.58			✓
CPT CODE	12002	Simple repair of superficial wou	20	7	\$162.65	\$259.35	\$159.45	\$226.35	\$93.98	\$178.89			✓
CPT CODE	12031	Layer closure of wounds of scal	14	7	\$172.80	\$307.89	\$120.94	\$345.91	\$107.94	\$221.23			✓
APG#	11	COMPLEX SKIN REPAIR											
CPT CODE	12015	Simple repair or superficial wou	13	5	\$158.14	\$190.87	\$132.53	\$129.98	\$77.92	\$142.40			✓
CPT CODE	12017	Simple repair or superficial wou	13	5	\$207.58	\$250.59	\$177.04	\$173.69	\$107.19	\$201.93			✓
CPT CODE	12054	Layer closure of wounds of face	12	4	\$261.18	\$194.87	\$230.95	\$122.55	\$142.37	\$185.48			✓

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	CPT CODE	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
APG#	12	SKIN & INTEGUMENT GRAFT, TRANSFER & REARRANGEMENT											
CPT CODE	15822	Blepharoplasty, upper eyelid	13	16	\$324.60	\$388.03	\$315.14	\$397.42	\$147.96	\$162.20			✓
APG#	12	SKIN & INTEGUMENT GRAFT, TRANSFER & REARRANGEMENT											
CPT CODE	14060	Adjacent tissue transfer or rearr	13	12	\$334.36	\$400.40	\$310.65	\$406.87	\$170.63	\$253.91			✓
CPT CODE	15100	Split graft, trunk, scalp, arms, le	15	11	\$314.44	\$479.70	\$301.43	\$420.07	\$119.69	\$420.00			✓
CPT CODE	15260	Full thickness graft, free, includ	14	9	\$400.38	\$503.81	\$335.17	\$536.05	\$206.67	\$240.10			✓
APG#	27	SIMPLE INCISION & EXCISION OF BREAST											
CPT CODE	19101	Biopsy of breast, incisional	28	16	\$220.49	\$282.25	\$190.73	\$294.72	\$121.56	\$160.25			✓
CPT CODE	19120	Excision or cyst, fibroadenoma,	31	23	\$267.72	\$350.48	\$206.71	\$327.86	\$158.77	\$221.81			✓
APG#	28	BREAST RECONSTRUCTION & MASTECTOMY											
CPT CODE	19140	Mastectomy for gynecomastia t	15	12	\$317.84	\$342.77	\$229.27	\$318.74	\$226.90	\$161.55			✓
CPT CODE	19160	Mastectomy, partial	16	10	\$342.34	\$325.87	\$298.94	\$314.76	\$176.63	\$153.32			✓
CPT CODE	19182	Mastectomy, subcutaneous	14	7	\$261.96	\$520.33	\$182.88	\$434.58	\$158.87	\$442.93			✓
APG#	53	OCCUPATIONAL THERAPY											
CPT CODE	97540	Training in activities of daily livi	15	0	\$49.01	N.A.	\$40.08	N.A.	\$31.18	N.A.			N.A.
CPT CODE	97541	Training in activities of daily livi	11	0	\$29.97	N.A.	\$20.04	N.A.	\$26.35	N.A.			N.A.
APG#	54	PHYSICAL THERAPY											
CPT CODE	97010	Physical medicine treatment to	15	0	\$31.16	N.A.	\$25.56	N.A.	\$18.73	N.A.			N.A.
CPT CODE	97128	Physical medicine treatment to	15	0	\$23.76	N.A.	\$19.49	N.A.	\$13.39	N.A.			N.A.
APG#	55	DIAGNOSTIC ARTHROSCOPY											
CPT CODE	29815	Arthroscopy, shoulder, diagnos	16	14	\$351.63	\$338.19	\$351.63	\$274.98	\$340.74	\$175.66			✓
CPT CODE	29870	Arthroscopy, knee, diagnostic, v	19	17	\$278.40	\$433.17	\$278.40	\$333.57	\$195.13	\$307.81		✓	
APG#	56	THERAPEUTIC ARTHROSCOPY											
CPT CODE	29877	Arthroscopy, knee, surgical deb	29	16	\$286.43	\$430.53	\$206.71	\$343.03	\$211.49	\$279.34		✓	
CPT CODE	29881	Arthroscopy, knee, surgical with	30	17	\$326.56	\$467.44	\$296.76	\$373.97	\$194.56	\$300.75		✓	
APG#	57	REPLACEMENT OF CAST											
CPT CODE	29075	Application elbow to finger (sho	14	5	\$140.24	\$200.58	\$96.88	\$67.28	\$108.86	\$200.45			✓
CPT CODE	29405	Application or short leg cast (bel	8	5	\$197.26	\$227.17	\$149.54	\$189.06	\$142.87	\$184.69			✓
APG#	58	SPLINT, STRAPPING & CAST REMOVAL											
CPT CODE	29125	Application of short arm splint (f	14	6	\$148.68	\$198.66	\$107.29	\$128.17	\$105.84	\$179.35			✓
CPT CODE	29580	Strapping unna boot	4	1	\$88.28	\$180.42	\$96.21	N.A.	\$60.12	N.A.			✓
APG#	59	TREATMENT OF CLOSED FRACTURE & DISLOCATION OF FINGER, TOE & RIB											
CPT CODE	21800	Treatment of rib fracture, closed	6	0	\$118.36	N.A.	\$91.26	N.A.	\$69.48	N.A.			N.A.
CPT CODE	26720	Treatment of closed phalangeal	15	7	\$155.28	\$154.27	\$148.94	\$129.98	\$93.27	\$102.73			✓
APG#	60	TREATMENT OF CLOSED FRACTURE & DISLOCATION EXCEPT FINGER, TOE & RIB											
CPT CODE	25600	Treatment of closed distal radial	15	7	\$175.65	\$220.99	\$159.44	\$202.82	\$88.56	\$147.88			✓
CPT CODE	25605	Treatment of closed distal radial	15	8	\$198.12	\$177.74	\$148.94	\$135.11	\$167.72	\$130.38			✓
CPT CODE	28470	Treatment of closed metatarsal	10	5	\$140.38	\$149.12	\$86.08	\$67.28	\$124.11	\$181.64			✓
APG#	62	TREATMENT OF OPEN FRACTURE & DISLOCATION EXCEPT FACE											
CPT CODE	25615	Treatment of open distal radial f	13	4	\$421.39	\$322.25	\$389.01	\$236.93	\$241.34	\$218.34			✓
CPT CODE	25620	Open treatment of closed or ope	15	7	\$416.95	\$250.16	\$389.01	\$193.01	\$279.70	\$134.47			✓
CPT CODE	26735	Open treatment of closed or ope	16	8	\$393.11	\$408.11	\$367.92	\$255.93	\$250.38	\$353.66			✓
APG#	63	JOINT MANIPULATION UNDER ANESTHESIA											

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	23700 Manipulation under anesthesia,	12	14	\$159.95	\$186.30	\$132.22	\$184.26	\$109.66	\$109.31			✓
CPT CODE	27570 Manipulation of knee joint under	13	11	\$154.04	\$190.00	\$117.70	\$212.86	\$106.99	\$94.88			✓
APG#	64 SIMPLE MAXILLOFACIAL PROCEDURES											
CPT CODE	30000 Drainage of hematoma, nasal, if	12	5	\$186.06	\$190.06	\$155.91	\$129.98	\$118.76	\$143.19			✓
CPT CODE	30110 Excision, nasal polyp(s), simple	14	7	\$203.59	\$264.84	\$180.19	\$202.82	\$118.23	\$220.46			✓
CPT CODE	30111 Excision, nasal polyp(s), simple	14	6	\$220.70	\$216.90	\$218.96	\$150.95	\$105.93	\$162.23			✓
CPT CODE	31020 Sinusotomy, maxillary (antrotomy)	13	12	\$280.02	\$436.97	\$206.71	\$309.05	\$232.55	\$405.27			✓
APG#	65 COMPLEX MAXILLOFACIAL PROCEDURES											
CPT CODE	30520 Septoplasty or submucous resect	18	21	\$319.42	\$475.72	\$251.51	\$460.34	\$171.47	\$322.78		✓	
CPT CODE	30620 Reconstruction, functional, inter	14	13	\$377.81	\$475.29	\$248.76	\$466.65	\$233.71	\$304.18			✓
APG#	66 INCISION OF BONE, JOINT, & TENDON											
CPT CODE	25000 Tendon sheath incision at radial	15	19	\$237.23	\$273.28	\$201.38	\$213.38	\$170.13	\$169.10			✓
CPT CODE	28270 Capsulotomy for contracture; m	15	9	\$311.67	\$348.39	\$273.36	\$224.06	\$255.17	\$274.29			✓
APG#	67 BUNION PROCEDURES											
CPT CODE	28290 Hallux valgus (bunion) correctio	16	19	\$265.76	\$469.27	\$218.96	\$368.27	\$154.44	\$346.22		✓	
CPT CODE	28292 Hallux valgus (bunion) correctio	16	15	\$325.11	\$417.65	\$254.24	\$358.83	\$242.81	\$291.67			✓
APG#	68 EXCISION OF BONE, JOINT & TENDON OF THE HAND & FOOT											
CPT CODE	26160 Excision or lesion of tendon she	19	21	\$239.91	\$290.84	\$193.52	\$263.15	\$162.82	\$192.01			✓
CPT CODE	28080 Excision of interdigital (Morton)	16	18	\$271.97	\$329.36	\$221.12	\$323.55	\$236.16	\$199.86			✓
APG#	69 EXCISION OF BONE, JOINT & TENDON EXCEPT HAND & FOOT											
CPT CODE	24105 Excision, olecranon bursa	14	14	\$223.72	\$289.76	\$194.78	\$250.00	\$141.59	\$171.75			✓
CPT CODE	27345 Excision of synovial cyst of popi	13	12	\$282.78	\$301.07	\$183.17	\$261.57	\$346.83	\$185.70			✓
APG#	70 ARTHROPLASTY											
CPT CODE	25447 Interposition arthroplasty, interca	14	7	\$333.56	\$249.93	\$250.07	\$202.82	\$225.22	\$127.07			✓
CPT CODE	26535 Arthroplasty interphalangeal joint	15	9	\$266.20	\$199.72	\$222.81	\$123.50	\$157.71	\$124.94			✓
APG#	71 HAND & FOOT TENOTOMY											
CPT CODE	26455 Tenotomy, flexor, single, finger	16	12	\$228.58	\$264.94	\$181.80	\$235.92	\$165.28	\$174.32			✓
CPT CODE	28234 Tenotomy, open, extensor, foot	12	7	\$270.47	\$325.51	\$181.80	\$144.55	\$276.13	\$295.19			✓
APG#	72 SIMPLE HAND & FOOT REPAIR EXCEPT TENOTOMY											
CPT CODE	26055 Tendon sheath incision for trigge	28	19	\$209.89	\$256.89	\$154.05	\$257.82	\$151.90	\$157.19			✓
CPT CODE	28285 Hammer toe operation, one tow	24	17	\$270.07	\$371.27	\$239.86	\$327.86	\$155.09	\$248.58			✓
APG#	73 COMPLEX HAND & FOOT REPAIR											
CPT CODE	26860 Arthrodesis, interphalangeal joint	17	12	\$381.94	\$423.28	\$292.48	\$319.42	\$300.46	\$309.89			✓
CPT CODE	28810 Amputation, metatarsal, with toe	18	8	\$200.79	\$295.38	\$175.97	\$211.52	\$123.95	\$285.11			✓
APG#	74 REPAIR, EXCEPT ARTHROTOMY, OF BONE, JOINT, TENDON EXCEPT OF HAND & FOOT											
CPT CODE	23420 Repair of complete shoulder (ro	11	11	\$448.43	\$631.39	\$298.02	\$536.05	\$467.96	\$422.81			✓
CPT CODE	25260 Repair, tendon or muscle, flexor	14	12	\$322.71	\$408.38	\$219.96	\$294.96	\$320.31	\$415.72			✓
APG#	75 ARTHROTOMY EXCEPT OF HAND & FOOT											
CPT CODE	27332 Arthrotomy, knee, for excision o	12	4	\$235.14	\$184.04	\$217.45	\$188.46	\$108.26	\$54.21			✓
CPT CODE	27333 Arthrotomy, knee, for excision o	11	4	\$221.00	\$198.61	\$206.71	\$188.46	\$98.49	\$75.16			✓
APG#	76 ARTHROCENTESIS & LIGAMENT OR TENDON INJECTION											
CPT CODE	20550 Injection, tendon sheath, ligame	6	9	\$189.25	\$230.22	\$116.78	\$308.77	\$186.07	\$124.35			✓

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	20605	Arthrocentesis, aspiration and/or	12	5	\$200.97	\$177.63	\$145.81	\$74.65	\$195.19	\$152.14			✓
CPT CODE	20610	Arthrocentesis, aspiration and/or	11	5	\$226.40	\$115.30	\$148.94	\$74.65	\$286.39	\$90.18			✓
APG#	77	SPEECH THERAPY											
CPT CODE	92507	Speech, language or hearing th	11	0	\$51.59	N.A.	\$40.77	N.A.	\$37.94	N.A.			N.A.
CPT CODE	92508	Speech, language or hearing th	3	0	\$39.02	N.A.	\$38.73	N.A.	\$7.24	N.A.			N.A.
APG#	79	PULMONARY TEST & THERAPY EXCEPT SPIROMETRY											
CPT CODE	94650	Intermittent positive pressure br	10	0	\$21.50	N.A.	\$19.09	N.A.	\$6.62	N.A.			N.A.
CPT CODE	94760	Noninvasive ear or pulse oxime	14	0	\$20.07	N.A.	\$9.80	N.A.	\$34.70	N.A.			N.A.
APG#	80	NEEDLE & CATHETER BIOPSY, ASPIRATION, LAVAGE & INTUBATION											
CPT CODE	32000	Thoracentesis, puncture or pleu	11	1	\$192.45	\$159.12	\$200.33	N.A.	\$79.23	N.A.			✓
CPT CODE	32405	Biopsy, lung or mediastinum, pe	6	0	\$325.68	N.A.	\$329.44	N.A.	\$200.55	N.A.			N.A.
APG#	81	SIMPLE ENDOSCOPY OF THE UPPER AIRWAY											
CPT CODE	31505	Laryngoscopy, indirect (separat	12	6	\$125.69	\$201.83	\$111.16	\$181.18	\$65.02	\$134.31			✓
CPT CODE	31510	Laryngoscopy, indirect (separat	14	6	\$131.45	\$176.25	\$120.30	\$121.53	\$65.89	\$147.43			✓
APG#	82	COMPLEX ENDOSCOPY OF THE UPPER AIRWAY											
CPT CODE	31535	Laryngoscopy, direct, operative	16	11	\$183.82	\$216.29	\$165.27	\$227.51	\$82.71	\$117.46			✓
CPT CODE	31541	Laryngoscopy, direct, operative	15	10	\$200.58	\$261.52	\$204.34	\$217.54	\$91.68	\$178.89			✓
APG#	83	SIMPLE ENDOSCOPY OF THE LOWER AIRWAY											
CPT CODE	31622	Bronchoscopy diagnostic, (flexib	29	8	\$183.56	\$272.09	\$145.71	\$240.35	\$116.76	\$168.59			✓
CPT CODE	31625	Bronchoscopy with biopsy	30	4	\$197.38	\$211.10	\$155.92	\$140.10	\$124.49	\$174.65			✓
APG#	84	COMPLEX ENDOSCOPY OF THE LOWER AIRWAY											
CPT CODE	31628	Bronchoscopy w/ transbronchial	24	2	\$209.40	\$336.42	\$204.56	\$336.42	\$125.20	\$188.94			✓
CPT CODE	31629	Bronchoscopy with transbronchi	9	1	\$202.72	\$159.12	\$233.50	N.A.	\$87.73	N.A.			✓
APG#	85	NASAL CAUTERIZATION & PACKING											
CPT CODE	30901	Control nasal hemorrhage, ante	11	4	\$158.63	\$155.51	\$112.62	\$113.01	\$101.72	\$117.29			✓
CPT CODE	30903	Control nasal hemorrhage, antei	11	5	\$163.20	\$221.79	\$112.62	\$232.25	\$96.40	\$114.39			✓
APG#	86	SIMPLE LIP, MOUTH & SALIVARY GLAND PROCEDURES											
CPT CODE	41110	Excision of lesion of tongue with	12	6	\$162.03	\$164.26	\$130.78	\$163.88	\$83.90	\$64.18			✓
CPT CODE	41112	Excision of lesion of tongue with	13	4	\$176.57	\$136.20	\$162.21	\$125.56	\$108.16	\$69.05			✓
APG#	87	COMPLEX LIP, MOUTH, & SALIVARY GLAND PROCEDURES											
CPT CODE	40500	Vermilionectomy (lip shave), mu	8	4	\$147.14	\$179.43	\$119.42	\$141.23	\$56.87	\$127.34			✓
CPT CODE	42410	Excision of parotid tumor or par	13	5	\$420.76	\$316.98	\$434.51	\$261.50	\$221.57	\$245.75			✓
APG#	88	MISCELLANEOUS SINUS, TRACHEAL & LUNG PROCEDURES											
CPT CODE	31030	Sinusotomy, maxillary (antrotom	13	9	\$311.87	\$464.29	\$232.77	\$290.24	\$179.14	\$340.91			✓
CPT CODE	31200	Ethmoidectomy intranasal, ante	12	10	\$317.72	\$395.93	\$277.08	\$356.60	\$182.49	\$232.80			✓
APG#	105	EXERCISE TOLERANCE TESTS											
CPT CODE	93015	Cardiovascular stress test using	12	0	\$103.02	N.A.	\$64.25	N.A.	\$143.67	N.A.			N.A.
CPT CODE	93017	Cardiovascular stress test using	6	0	\$1,093.65	N.A.	\$64.14	N.A.	\$2,526.33	N.A.			N.A.
APG#	106	ECHOCARDIOGRAPHY											
CPT CODE	93307	Echocardiography, real-time wit	14	0	\$1,054.22	N.A.	\$66.00	N.A.	\$3,523.52	N.A.			N.A.
CPT CODE	93320	Doppler echocardiography, puls	1	0	\$56.41	N.A.	\$22.68	N.A.	\$114.01	N.A.			N.A.
APG#	108	CARDIAC ELECTROPHYSIOLOGIC TESTS											

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & OPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	92960 Cardioversion, elective, electric	7	0	\$117.78	N.A.	\$106.68	N.A.	\$58.58	N.A.			N.A.
CPT CODE	93618 Induction of arrhythmia by elect	3	0	\$124.22	N.A.	\$118.47	N.A.	\$49.58	N.A.			N.A.
APG#	109 VASCULAR CANNULATION WITH NEEDLE & CATHETER											
CPT CODE	36489 Placement of central venous cat	10	2	\$145.68	\$785.94	\$127.97	\$785.94	\$86.95	\$568.32			✓
CPT CODE	36860 Cannula declotting without ballo	4	0	\$224.66	N.A.	\$229.70	N.A.	\$141.17	N.A.			N.A.
APG#	110 DIAGNOSTIC CARDIAC CATHETERIZATION											
CPT CODE	93547 Combined left heart catheterizat	9	0	\$3,204.31	N.A.	\$80.43	N.A.	\$9,346.05	N.A.			N.A.
CPT CODE	93549 Combined right and left heart ca	9	0	\$3,242.36	N.A.	\$110.27	N.A.	\$9,331.91	N.A.			N.A.
APG#	111 ANGIOPLASTY & TRANSCATHETER PROCEDURES											
CPT CODE	75963 Percutaneous transluminal angi	14	0	\$195.59	N.A.	\$152.51	N.A.	\$145.35	N.A.			N.A.
CPT CODE	92982 Percutaneous transluminal coro	7	0	\$241.03	N.A.	\$243.09	N.A.	\$85.81	N.A.			N.A.
APG#	112 PACEMAKER INSERTION & REPLACEMENT											
CPT CODE	33212 Insertion or replacement of pace	15	0	\$316.47	N.A.	\$322.19	N.A.	\$160.04	N.A.			N.A.
CPT CODE	33219 Repair of pacemaker with replac	13	0	\$303.27	N.A.	\$285.92	N.A.	\$175.83	N.A.			N.A.
APG#	113 REMOVAL & REVISION OF PACEMAKER & VASCULAR DEVICE											
CPT CODE	33216 Insertion, replacement, or repos	11	0	\$306.60	N.A.	\$326.52	N.A.	\$203.86	N.A.			N.A.
CPT CODE	36497 Removal of implantable intrave	11	7	\$208.74	\$342.19	\$158.85	\$290.57	\$200.98	\$246.73			✓
APG#	114 MINOR VASCULAR REPAIR & FISTULA CONSTRUCTION											
CPT CODE	35875 Thrombectomy and/or repair of	14	1	\$353.04	\$155.44	\$273.52	N.A.	\$330.83	N.A.			✓
CPT CODE	36495 Insertion of implantable intrave	15	6	\$238.29	\$446.25	\$204.34	\$323.37	\$145.85	\$469.99			✓
APG#	115 SECONDARY VARICOSE VEINS & VASCULAR INJECTION											
CPT CODE	37785 Ligation, division, and/or excisio	17	11	\$407.53	\$472.20	\$387.14	\$391.18	\$261.02	\$262.75			✓
CPT CODE	37799 Unlisted procedure, vascular su	1	1	\$172.43	\$349.86	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	116 VASCULAR LIGATION											
CPT CODE	37618 Ligation, major artery (e.g., post	10	0	\$253.96	N.A.	\$243.19	N.A.	\$88.94	N.A.			N.A.
CPT CODE	37650 Interrupting, partial or complete,	10	0	\$315.92	N.A.	\$227.15	N.A.	\$260.97	N.A.			N.A.
CPT CODE	37720 Ligation and division and compl	14	12	\$321.46	\$373.03	\$276.24	\$373.95	\$213.76	\$208.92			✓
APG#	117 CARDIOPULMONARY RESUSCITATION & INTUBATION											
CPT CODE	31500 Intubation, endotracheal, emerg	7	2	\$86.31	\$52.39	\$58.36	\$52.39	\$70.36	\$27.32			✓
CPT CODE	92950 Cardiopulmonary resuscitation	10	0	\$141.85	N.A.	\$106.42	N.A.	\$88.10	N.A.			N.A.
APG#	131 CHEMOTHERAPY BY INFUSION											
CPT CODE	96501 Chemotherapy injection, intrave	4	0	\$177.43	N.A.	\$130.31	N.A.	\$171.74	N.A.			N.A.
CPT CODE	96509 Chemotherapy injection, intrave	4	0	\$288.18	N.A.	\$303.61	N.A.	\$175.31	N.A.			N.A.
CPT CODE	96510 Chemotherapy inject, iv, comple	2	0	\$379.64	N.A.	\$379.64	N.A.	\$93.31	N.A.			N.A.
APG#	132 CHEMOTHERAPY EXCEPT BY INFUSION											
CPT CODE	96500 Chemotherapy injection, intrave	4	0	\$85.34	N.A.	\$92.80	N.A.	\$55.75	N.A.			N.A.
CPT CODE	96549 Unlisted chemotherapy procedu	0	0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	133 TRANSFUSION & PHLEBOTOMY											
CPT CODE	36430 Transfusion, blood or blood com	8	1	\$148.81	\$194.13	\$121.82	N.A.	\$102.05	N.A.			✓
CPT CODE	36440 Push transfusion, blood, 2 years	2	0	\$132.71	N.A.	\$132.72	N.A.	\$36.96	N.A.			N.A.
APG#	135 DEEP LYMPH STRUCTURE & THYROID PROCEDURES											
CPT CODE	38510 Biopsy or excision of lymph nod	16	13	\$253.60	\$359.45	\$198.32	\$259.42	\$154.43	\$365.57			✓

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs												
SURGICAL PROCEDURES	CPT CODE	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)	
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Mean	Higher Mean
												No Significant Difference
												✓
APG#	157	ALIMENTARY TESTS AND SIMPLE TUBE PLACEMENT										
CPT CODE	91010	Esophageal motility study	3	0	\$82.42	N.A.	\$62.62	N.A.	\$49.77	N.A.		N.A.
CPT CODE	91030	Esophagus, acid perfusion (Bar	2	0	\$62.78	N.A.	\$62.78	N.A.	\$0.23	N.A.		N.A.
APG#	158	ESOPHAGEAL DILATION WITHOUT ENDOSCOPY										
CPT CODE	43450	Dilation of esophagus, by ungui	24	5	\$114.77	\$168.96	\$112.84	\$207.30	\$74.55	\$116.39		✓
CPT CODE	43451	Dilation of esophagus, by ungui	20	6	\$101.74	\$146.46	\$95.46	\$140.63	\$74.76	\$105.94		✓
APG#	159	PERCUTANEOUS & OTHER SIMPLE GASTROINTESTINAL BIOPSY										
CPT CODE	47000	Biopsy of liver, percutaneous ne	9	2	\$216.29	\$103.46	\$157.23	\$103.46	\$193.76	\$1.92		✓
CPT CODE	49180	Biopsy, abdominal or retroperito	6	2	\$143.63	\$425.19	\$103.61	\$425.19	\$96.53	\$456.93		✓
CPT CODE	91000	Esophageal intubation and colle	2	0	\$141.83	N.A.	\$141.83	N.A.	\$44.76	N.A.		N.A.
APG#	160	ANOSCOPY WITH BIOPSY & DIAGNOSTIC PROCTOSIGMOIDOSCOPY										
CPT CODE	45300	Proctosigmoidoscopy diagnostic	10	4	\$92.08	\$117.85	\$92.05	\$83.77	\$52.95	\$102.30		✓
CPT CODE	45330	Sigmoidoscopy, flexible fiberopt	23	13	\$115.54	\$174.86	\$107.42	\$115.42	\$80.72	\$133.07		✓
CPT CODE	46610	Anoscopy for removal of polyp	12	5	\$102.12	\$115.50	\$86.72	\$99.08	\$71.95	\$89.98		✓
APG#	161	PROCTOSIGMOIDOSCOPY WITH EXCISION OR BIOPSY										
CPT CODE	45331	Sigmoidoscopy, flexible fiberopt	23	10	\$123.89	\$137.51	\$130.80	\$105.90	\$81.87	\$92.44		✓
CPT CODE	45333	Sigmoidoscopy, flexible fiberopt	23	8	\$146.41	\$163.15	\$130.80	\$121.01	\$91.48	\$132.50		✓
APG#	162	DIAGNOSTIC UPPER GASTROINTESTINAL ENDOSCOPY										
CPT CODE	43235	Upper GI endoscopy including e	22	12	\$115.61	\$188.03	\$126.46	\$105.90	\$71.42	\$164.90		✓
CPT CODE	43239	Upper GI endoscopy incl. esopi	25	13	\$139.11	\$187.83	\$148.94	\$149.62	\$85.50	\$114.92		✓
APG#	163	THERAPEUTIC UPPER GASTROINTESTINAL ENDOSCOPY										
CPT CODE	43245	Upper GI endoscopy including e	13	5	\$122.08	\$175.76	\$116.35	\$156.79	\$90.31	\$107.29		✓
CPT CODE	43246	Upper GI endoscopy including e	14	5	\$126.08	\$152.91	\$110.30	\$144.55	\$85.83	\$96.69		✓
APG#	164	DIAGNOSTIC LOWER GASTROINTESTINAL ENDOSCOPY										
CPT CODE	45378	Colonoscopy, fiberoptic, beyonc	25	13	\$172.59	\$207.39	\$159.25	\$115.42	\$125.76	\$167.54		✓
CPT CODE	45380	Colonoscopy, fiberoptic, beyonc	25	14	\$194.93	\$244.23	\$177.43	\$207.01	\$130.16	\$171.28		✓
APG#	165	THERAPEUTIC LOWER GASTROINTESTINAL ENDOSCOPY										
CPT CODE	45383	Colonoscopy, fiberoptic, beyonc	12	8	\$234.50	\$211.68	\$213.06	\$192.44	\$171.38	\$126.76		✓
CPT CODE	45385	Colonoscopy, fiberoptic, beyonc	23	15	\$186.28	\$282.38	\$192.49	\$156.79	\$117.91	\$267.83		✓
APG#	166	ERCP & OTHER MISC. GASTROINTESTINAL ENDOSCOPY PROCEDURES										
CPT CODE	43260	Endoscopic retrograde cholangi	13	0	\$253.92	N.A.	\$223.69	N.A.	\$177.90	N.A.		N.A.
CPT CODE	44360	Small intestinal endoscopy beyo	9	3	\$177.10	\$110.59	\$136.56	\$79.08	\$129.84	\$54.64		✓
APG#	167	TONSIL & ADENOID PROCEDURES										
CPT CODE	42821	Tonsillectomy and adenoidectom	26	17	\$270.95	\$313.83	\$258.97	\$232.25	\$144.98	\$201.27		✓
CPT CODE	42826	Tonsillectomy, primary or secon	25	15	\$265.88	\$282.20	\$259.74	\$232.25	\$135.39	\$170.86		✓
APG#	168	HERNIA & HYDROCELE PROCEDURES										
CPT CODE	49505	Repair inguinal hernia, age 5 or	27	20	\$242.45	\$420.65	\$221.04	\$368.15	\$130.28	\$263.97		✓
CPT CODE	49520	Repair inguinal hernia, any age	26	16	\$247.42	\$332.99	\$223.56	\$307.68	\$123.43	\$169.32		✓
APG#	169	SIMPLE HEMORRHOID PROCEDURES										
CPT CODE	46230	Excision of external hemorrhoid	11	12	\$184.58	\$275.45	\$146.87	\$282.09	\$124.69	\$156.60		✓
CPT CODE	46934	Description of Hemorrhoids, any	11	10	\$204.80	\$285.13	\$146.87	\$293.64	\$129.17	\$156.00		✓

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG#	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
APG#	170	SIMPLE ANAL & RECTAL PROCEDURES EXCEPT HEMORRHOID PROCEDURES											
CPT CODE	45915	Removal of fecal impaction or fec	5	2	\$184.65	\$133.66	\$162.21	\$133.66	\$85.56	\$77.19			✓
CPT CODE	46200	Fissurectomy, with or without sp	13	13	\$177.55	\$256.31	\$160.99	\$259.42	\$83.63	\$119.43		✓	
APG#	171	COMPLEX ANAL & RECTAL PROCEDURES											
CPT CODE	45170	Excision of Rectal tumor, transa	11	7	\$309.49	\$463.04	\$236.96	\$259.42	\$242.19	\$506.20			✓
CPT CODE	46255	Hemorrhoidectomy internal and	14	15	\$212.94	\$337.15	\$161.60	\$356.17	\$109.51	\$198.16		✓	
APG#	172	PERITONEAL PROCEDURES & CHANGE OF INTRA-ABDOMINAL TUBE											
CPT CODE	43760	Change of gastrostomy tube	12	3	\$96.67	\$126.27	\$76.49	\$115.42	\$70.83	\$76.19			✓
CPT CODE	49080	Peritoneocentesis, abdominal p	10	1	\$135.86	\$1,022.97	\$91.98	N.A.	\$105.30	N.A.		✓	
APG#	173	MISC. DIGESTIVE PROCEDURES											
CPT CODE	43750	Percutaneous placement of gas	9	3	\$167.61	\$217.66	\$192.49	\$115.42	\$101.77	\$230.40			✓
CPT CODE	49421	Insertion of intraperitoneal cann	6	0	\$204.47	N.A.	\$170.80	N.A.	\$105.71	N.A.			N.A.
APG#	183	SIMPLE URINARY STUDIES & PROCEDURES											
CPT CODE	51720	Bladder instillation of antineopl	6	1	\$116.62	\$356.17	\$91.82	N.A.	\$77.74	N.A.		✓	
CPT CODE	51725	Simple cystometrogram (CMG)	7	0	\$129.79	N.A.	\$112.95	N.A.	\$73.18	N.A.			N.A.
CPT CODE	51736	Simple uroflowmetry (UFR) (e.g	3	0	\$124.37	N.A.	\$112.00	N.A.	\$70.38	N.A.			N.A.
APG#	184	RENAL EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY											
CPT CODE	50590	Lithotripsy, extracorporeal shock	4	2	\$211.41	\$973.94	\$228.79	\$973.94	\$153.63	\$114.99		✓	
APG#	185	URINARY CATHETERIZATION & DILATATION											
CPT CODE	51010	Aspiration of bladder, by trocar	9	1	\$126.79	\$419.28	\$146.74	N.A.	\$39.39	N.A.		✓	
CPT CODE	53660	Dilation of female urethra includ	9	3	\$137.36	\$170.95	\$117.52	\$182.05	\$100.80	\$65.27			✓
CPT CODE	53670	Catheterization, urethra simple	8	2	\$87.83	\$33.99	\$74.16	\$33.99	\$65.22	\$12.14	✓		
APG#	186	HEMODIALYSIS											
CPT CODE	90935	Hemodialysis procedure with sin	4	0	\$278.62	N.A.	\$258.04	N.A.	\$111.30	N.A.			N.A.
CPT CODE	90937	Hemodialysis procedure requir	2	0	\$328.47	N.A.	\$328.47	N.A.	\$142.09	N.A.			N.A.
APG#	187	PERITONEAL DIALYSIS											
CPT CODE	90945	Dialysis procedure other than he	3	0	\$388.06	N.A.	\$534.03	N.A.	\$305.14	N.A.			N.A.
CPT CODE	90947	Dialysis procedure other than he	1	0	\$798.90	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	188	SIMPLE CYSTOURETHROSCOPY											
CPT CODE	52000	Cystourethroscopy (separate pri	26	14	\$162.75	\$209.61	\$138.63	\$207.42	\$117.44	\$71.75			✓
CPT CODE	52281	Cystourethroscopy, with calibra	23	8	\$170.64	\$268.77	\$147.37	\$261.39	\$94.15	\$76.44		✓	
APG#	189	COMPLEX CYSTOURETHROSCOPY & LITHOLAPAXY											
CPT CODE	52224	Cystourethroscopy, w/ fulgurati	14	7	\$189.74	\$248.11	\$165.27	\$264.67	\$92.02	\$110.51			✓
CPT CODE	52234	Cystourethroscopy, w/fulgurati	22	6	\$189.65	\$259.94	\$181.13	\$248.65	\$104.20	\$105.67			✓
APG#	190	PERCUTANEOUS RENAL ENDOSCOPY, CATHETERIZATION & URETERAL END											
CPT CODE	50392	Introduction of intracatheter or c	5	0	\$161.06	N.A.	\$116.47	N.A.	\$117.67	N.A.			N.A.
CPT CODE	50393	Introduction of ureteral catheter	10	0	\$191.74	N.A.	\$203.64	N.A.	\$69.39	N.A.			N.A.
CPT CODE	50953	Ureteral endoscopy through est	8	1	\$199.14	\$261.50	\$187.53	N.A.	\$66.06	N.A.			✓
APG#	191	CYSTOTOMY											
CPT CODE	51020	Cystotomy or cystostomy, with f	6	1	\$158.93	\$182.43	\$123.51	N.A.	\$94.93	N.A.			✓
CPT CODE	51040	Cystostomy, cystostomy with dra	8	2	\$151.58	\$210.31	\$144.77	\$210.31	\$78.98	\$72.39			✓
CPT CODE	51045	Cystostomy w/insertion of urete	9	2	\$190.12	\$294.55	\$206.71	\$294.55	\$88.67	\$158.55			✓

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL INDICATOR RESOURCE COSTS FOR PATIENTS											Statistical Significance (90 percent)		
		Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference	
SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
APG#	192	SIMPLE URETHRAL PROCEDURES											
CPT CODE	53200	Biopsy of urethra	12	4	\$186.81	\$290.62	\$165.27	\$294.65	\$128.71	\$118.63		✓	
CPT CODE	53265	Excision or fulguration; urethral	13	4	\$185.25	\$282.73	\$147.37	\$278.87	\$139.08	\$116.65		✓	
APG#	193	COMPLEX URETHRAL PROCEDURES											
CPT CODE	53220	Excision or fulguration of carcinoma	11	2	\$188.80	\$249.16	\$179.08	\$249.16	\$147.04	\$106.72		✓	
CPT CODE	53235	Excision of urethral diverticulum	11	1	\$265.01	\$293.06	\$199.82	N.A.	\$277.58	N.A.		✓	
APG#	209	TESTICULAR EPIDIDYMAL PROCEDURES											
CPT CODE	54520	Orchiectomy, simple, w/ or w/o	15	13	\$283.70	\$266.42	\$168.34	\$308.32	\$253.67	\$136.80		✓	
CPT CODE	54521	Orchiectomy, simple w/ or w/o t	13	6	\$263.09	\$264.98	\$211.30	\$255.57	\$174.00	\$164.00		✓	
APG#	210	INSERTION OF PENILE PROSTHESIS											
CPT CODE	54400	Insertion of penile prosthesis; n	7	3	\$311.93	\$473.50	\$297.52	\$503.66	\$122.18	\$84.89		✓	
CPT CODE	54405	Insertion of inflatable (multi-com	6	4	\$346.81	\$518.26	\$302.98	\$521.43	\$164.87	\$43.50		✓	
APG#	211	COMPLEX PENILE PROCEDURES											
CPT CODE	54402	Removal or replacement of non	6	0	\$253.16	N.A.	\$198.77	N.A.	\$185.79	N.A.		N.A.	
CPT CODE	54407	Removal, repair or replacement	6	3	\$240.77	\$283.19	\$216.51	\$290.57	\$178.95	\$76.94		✓	
APG#	212	SIMPLE PENILE PROCEDURES											
CPT CODE	54152	Circumcision, clamp procedure	6	7	\$280.25	\$355.29	\$228.08	\$144.55	\$204.97	\$491.65		✓	
CPT CODE	54161	Circumcision, surgical excision	17	16	\$241.72	\$300.46	\$196.41	\$283.23	\$177.29	\$174.47		✓	
APG#	213	PROSTATE NEEDLE & PUNCH BIOPSY											
CPT CODE	55700	Biopsy, prostate needle or punc	24	6	\$150.14	\$199.85	\$118.80	\$210.08	\$94.05	\$103.11		✓	
CPT CODE	55705	Biopsy, prostate incisional, any	12	6	\$144.42	\$162.65	\$129.50	\$165.76	\$87.44	\$98.85		✓	
APG#	214	TRANSURETHRAL RESECTION OF PROSTATE & OTHER PROSTATE PROCEDURE											
CPT CODE	52500	Transurethral resection of blad	16	5	\$222.43	\$336.49	\$208.00	\$316.47	\$108.69	\$124.49		✓	
CPT CODE	52601	Transurethral resection or prost	13	1	\$299.27	\$633.86	\$177.04	N.A.	\$251.80	N.A.		✓	
APG#	237	TREATMENT OF SPONTANEOUS ABORTION											
CPT CODE	59801	Treatment of spontaneous abor	10	9	\$163.22	\$181.58	\$141.30	\$155.64	\$113.33	\$116.14		✓	
CPT CODE	59820	Treatment of missed abortion, fi	13	15	\$168.82	\$211.39	\$148.44	\$198.39	\$106.36	\$119.13		✓	
APG#	238	THERAPEUTIC ABORTION											
CPT CODE	59840	Legal (therapeutic) abortion, by	9	7	\$167.09	\$208.86	\$170.55	\$155.64	\$98.66	\$158.56		✓	
CPT CODE	59841	Legal (therapeutic) abortion, by	6	6	\$223.72	\$195.66	\$184.52	\$135.53	\$129.84	\$159.93		✓	
APG#	240	FEMALE GENITAL ENDOSCOPY											
CPT CODE	58980	Laparoscopy for visualization of	21	19	\$310.55	\$374.24	\$237.81	\$343.45	\$194.22	\$209.05		✓	
CPT CODE	58985	Laparoscopy for visualization of	18	17	\$299.51	\$433.48	\$220.82	\$384.08	\$199.94	\$359.92		✓	
APG#	241	COLPOSCOPY											
CPT CODE	57452	Colposcopy (vaginoscopy); (sep	8	9	\$210.18	\$281.63	\$184.52	\$257.82	\$148.14	\$200.04		✓	
CPT CODE	57454	Colposcopy (vaginoscopy); with	11	5	\$199.05	\$211.89	\$148.94	\$159.12	\$112.99	\$162.62		✓	
APG#	242	MISC. FEMALE REPRODUCTIVE PROCEDURES											
CPT CODE	56600	Biopsy of vulva (separate proced	15	13	\$185.26	\$278.04	\$144.64	\$238.77	\$119.80	\$198.45		✓	
CPT CODE	57520	Biopsy of cervix, circumferential	17	21	\$174.57	\$273.21	\$154.03	\$252.76	\$96.76	\$170.73		✓	
APG#	243	DILATION & CURETTAGE											
CPT CODE	57820	Dilation and curettage of cervix	21	3	\$195.13	\$129.21	\$166.38	\$86.27	\$118.08	\$94.55		✓	
CPT CODE	58120	Dilation and curettage, diagnost	23	16	\$190.54	\$255.54	\$162.21	\$234.55	\$111.36	\$140.76		✓	

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs													
SURGICAL PROCEDURES			Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
	APG #	CPT DESCRIPTION	Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
APG#	244	FEMALE GENITAL EXCISION & REPAIR											
CPT CODE	56620	Vulvectomy, partial, unilateral or	9	7	\$212.22	\$246.85	\$162.21	\$283.07	\$149.87	\$130.72			✓
CPT CODE	57135	Excision of vaginal cyst or tumor	14	12	\$188.00	\$249.30	\$151.75	\$222.38	\$116.57	\$173.10			✓
APG#	261	ELECTROENCEPHALOGRAM											
CPT CODE	95819	Electroencephalogram (EEG) in	13	0	\$1,633.52	N.A.	\$120.65	N.A.	\$5,150.63	N.A.			N.A.
CPT CODE	95828	Polysomnography (recording, at	4	0	\$755.02	N.A.	\$806.02	N.A.	\$393.39	N.A.			N.A.
APG#	263	NERVE & MUSCLE TESTS											
CPT CODE	95900	Nerve conduction, velocity and/c	4	0	\$39.00	N.A.	\$27.50	N.A.	\$38.61	N.A.			N.A.
CPT CODE	95904	Nerve conduction, velocity and/c	5	0	\$40.53	N.A.	\$41.67	N.A.	\$33.61	N.A.			N.A.
APG#	264	INJECTION OF SUBSTANCE INTO SPINAL CORD											
CPT CODE	62278	Injection of anesthetic substance	7	7	\$94.52	\$192.24	\$93.54	\$221.80	\$42.50	\$84.13		✓	
CPT CODE	62289	Injection of substance other than	3	6	\$125.07	\$197.05	\$112.00	\$197.10	\$42.37	\$97.83			✓
APG#	266	NERVE INJECTION & STIMULATION											
CPT CODE	64510	Injection, anesthetic agent; stell	4	9	\$137.62	\$199.55	\$128.46	\$207.30	\$68.81	\$101.77			✓
CPT CODE	64520	Injection, anesthetic agent; lum	7	5	\$116.43	\$297.07	\$148.94	\$226.35	\$53.75	\$207.88			✓
APG#	267	REVISION & REMOVAL OF NEUROLOGICAL DEVICE											
CPT CODE	63660	Revision or removal of spinal ne	3	1	\$185.75	\$115.42	\$196.10	N.A.	\$27.63	N.A.			✓
CPT CODE	63688	Revision or removal of spinal ne	4	1	\$165.51	\$202.82	\$169.42	N.A.	\$39.08	N.A.			✓
APG#	269	CARPAL TUNNEL RELEASE											
CPT CODE	64721	Neuroplasty and/or transposi	24	20	\$248.81	\$346.05	\$205.57	\$318.32	\$174.56	\$202.64		✓	
APG#	270	NERVE REPAIR & DESTRUCTION											
CPT CODE	64718	Neuroplasty and/or transposi	13	12	\$343.10	\$541.41	\$254.24	\$566.57	\$324.70	\$330.76			✓
CPT CODE	64719	Neuroplasty and/or transposi	13	11	\$302.34	\$471.62	\$231.21	\$466.71	\$191.49	\$270.91		✓	
APG#	271	COMPLEX NERVE REPAIR											
CPT CODE	64831	Suture of digital nerve, hand or	11	7	\$489.27	\$416.11	\$296.45	\$290.57	\$718.50	\$369.72			✓
CPT CODE	64834	Suture of one nerve, hand or foot	9	6	\$261.66	\$331.20	\$256.02	\$294.07	\$96.59	\$191.53			✓
APG#	272	SPINAL TAP											
CPT CODE	62270	Spinal puncture, lumbar, diagno	9	0	\$81.46	N.A.	\$88.03	N.A.	\$39.67	N.A.			N.A.
CPT CODE	62272	Spinal puncture, therapeutic, for	3	0	\$81.72	N.A.	\$82.46	N.A.	\$6.71	N.A.			N.A.
APG#	289	SIMPLE LASER EYE PROCEDURES											
CPT CODE	65855	Trabeculoplasty by laser surgen	10	3	\$183.89	\$56.39	\$177.27	\$57.14	\$105.18	\$22.96	✓		
CPT CODE	66821	Dissection of secondary membra	12	12	\$209.99	\$163.47	\$196.30	\$142.70	\$131.29	\$137.58			✓
APG#	290	COMPLEX LASER EYE PROCEDURES											
CPT CODE	67105	Repair of retinal detachment, or	4	3	\$413.64	\$1,034.43	\$295.78	\$1,035.14	\$303.47	\$481.59		✓	
CPT CODE	67228	Destruction of extensive or prog	4	3	\$196.37	\$110.28	\$205.26	\$78.97	\$76.65	\$73.95			✓
APG#	291	CATARACT PROCEDURES											
CPT CODE	66850	Removal of lens material; phaco	19	9	\$282.57	\$366.02	\$292.08	\$301.07	\$184.65	\$196.70			✓
CPT CODE	66940	Extraction of lens with or withou	16	10	\$191.90	\$322.55	\$161.01	\$295.66	\$116.71	\$166.86		✓	
CPT CODE	66983	Intracapsular cataract extraction	18	10	\$312.78	\$358.00	\$282.92	\$373.59	\$215.50	\$206.79			✓
CPT CODE	66984	Extracapsular cataract removal	22	23	\$305.95	\$387.33	\$277.97	\$379.03	\$191.62	\$229.96			✓
CPT CODE	66985	Insertion of intraocular lens sub	20	18	\$201.78	\$330.78	\$185.73	\$323.77	\$161.55	\$184.33		✓	
APG#	292	SIMPLE ANTERIOR SEGMENT EYE PROCEDURES FOR GLAUCOMA											

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	66500 Iridotomy by stab incision (sepal	5	4	\$189.88	\$140.43	\$196.41	\$159.35	\$158.13	\$58.97			✓
CPT CODE	66720 Cyclocryotherapy initial	2	5	\$144.68	\$323.17	\$144.68	\$337.22	\$87.72	\$196.17			✓
APG#	293 COMPLEX ANTERIOR SEGMENT EYE PROCEDURES FOR GLAUCOMA											✓
CPT CODE	66150 Fistulization of sclera for glauco	3	3	\$142.84	\$463.87	\$114.64	\$594.13	\$55.63	\$254.61		✓	
CPT CODE	66170 Fistulization of sclera for glauco	7	10	\$280.30	\$542.92	\$304.45	\$533.69	\$139.82	\$274.53			
APG#	294 SIMPLE ANTERIOR SEGMENT EYE PROCEDURES EXCEPT FOR GLAUCOMA											
CPT CODE	65450 Destruction of lesion of cornea	3	4	\$116.15	\$219.99	\$117.70	\$224.85	\$8.90	\$123.50			✓
CPT CODE	66820 Discussion of secondary membra	5	4	\$216.13	\$233.51	\$206.71	\$181.54	\$175.96	\$130.09			✓
APG#	295 MODERATE ANTERIOR SEGMENT EYE PROCEDURES											✓
CPT CODE	66625 Iridectomy, w/comeoscleral or c	4	10	\$133.25	\$216.59	\$139.53	\$172.32	\$80.30	\$128.26			✓
CPT CODE	66830 Removal of secondary membra	8	1	\$162.23	\$221.75	\$113.23	N.A.	\$108.50	N.A.			✓
APG#	296 COMPLEX ANTERIOR SEGMENT EYE PROCEDURES EXCEPT FOR GLAUCOMA										✓	
CPT CODE	65750 Keratoplasty, penetrating, includ	2	12	\$156.65	\$500.46	\$156.65	\$457.06	\$70.80	\$296.95			✓
CPT CODE	67010 Removal of vitreous, anterior ap	10	8	\$289.77	\$369.30	\$240.47	\$219.57	\$223.08	\$346.36			✓
APG#	297 SIMPLE POSTERIOR SEGMENT EYE PROCEDURES											
CPT CODE	67208 Destruction of localized lesion o	3	0	\$258.06	N.A.	\$251.21	N.A.	\$178.93	N.A.			N.A.
CPT CODE	67227 Destruction of extensive or prog	2	2	\$178.90	\$244.95	\$178.90	\$244.95	\$102.27	\$121.37			✓
APG#	298 COMPLEX POSTERIOR SEGMENT EYE PROCEDURES											✓
CPT CODE	67036 Vitrectomy, mechanical, pars pli	6	8	\$223.35	\$492.72	\$182.78	\$372.67	\$148.39	\$427.30		✓	
CPT CODE	67101 Repair of retinal detachment, on	3	3	\$349.60	\$1,077.33	\$251.21	\$1,035.14	\$214.17	\$418.83			
APG#	299 STRABISMUS & MUSCLE EYE PROCEDURES											✓
CPT CODE	67311 Strabismus surgery on patient n	9	16	\$253.42	\$337.39	\$201.38	\$324.90	\$151.42	\$186.58			✓
CPT CODE	67312 Strabismus surgery on patient n	9	19	\$257.34	\$443.59	\$162.21	\$409.54	\$204.54	\$258.95		✓	
APG#	300 SIMPLE REPAIR & PLASTIC PROCEDURES OF EYE											✓
CPT CODE	67840 Excision of lesion of eye lid with	8	12	\$218.11	\$249.27	\$158.33	\$184.65	\$220.11	\$195.65			✓
CPT CODE	67921 Repair of entropion suture	10	14	\$263.47	\$359.32	\$181.80	\$395.21	\$295.25	\$159.98			✓
APG#	301 COMPLEX REPAIR & PLASTIC PROCEDURES OF EYE											✓
CPT CODE	67904 Repair of blepharoptosis (tarsol	9	14	\$408.77	\$409.51	\$209.69	\$318.16	\$332.10	\$270.32			✓
CPT CODE	68720 Dacryocystorhinotomy (fistuliz	9	11	\$560.40	\$675.41	\$481.34	\$679.09	\$383.50	\$421.01			✓
APG#	313 OTORHINOLARYNGOLOGIC FUNCTION TESTS											
CPT CODE	92545 Oscillating tracking test, with re	1	0	\$34.54	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
CPT CODE	92585 Brainstem evoked response rec	5	0	\$2,091.02	N.A.	\$100.13	N.A.	\$4,085.21	N.A.			N.A.
APG#	314 MAJOR EXTERNAL EAR PROCEDURES											✓
CPT CODE	69140 Excision exostosis (es), external	6	3	\$158.94	\$257.28	\$157.32	\$173.69	\$59.19	\$224.31			✓
CPT CODE	69310 Reconstruction of external aud	7	2	\$384.50	\$454.20	\$228.18	\$454.20	\$371.17	\$293.68			✓
APG#	315 TYMPANOSTOMY & OTHER SIMPLE MIDDLE EAR PROCEDURES											✓
CPT CODE	69420 Myringotomy including aspiratio	13	11	\$176.15	\$179.39	\$132.53	\$156.79	\$127.81	\$104.14			✓
CPT CODE	69433 Tympanostomy (requiring insert	9	11	\$99.60	\$148.87	\$77.71	\$156.79	\$62.65	\$92.69			✓
APG#	316 TYMPANOPLASTY & OTHER COMPLEX MIDDLE EAR PROCEDURES											✓
CPT CODE	69631 Tympanoplasty w/o mastoidect	11	8	\$363.89	\$443.89	\$301.43	\$331.17	\$287.90	\$340.42			✓
CPT CODE	69660 Stapedectomy with re-establish	8	4	\$520.56	\$443.90	\$433.04	\$303.23	\$341.84	\$362.92			✓
APG#	318 SIMPLE AUDIOMETRY											

TOTAL INDIRECT RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs													
SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	92557	Basic comprehensive audiometry	5	0	\$51.52	N.A.	\$43.07	N.A.	\$32.49	N.A.			N.A.
CPT CODE	92567	Tympanometry	5	0	\$9.03	N.A.	\$9.21	N.A.	\$1.47	N.A.			N.A.
APG#	319	REMOVAL OF IMPACTED CERUMEN											
CPT CODE	69210	Removal impacted cerumen (se	6	5	\$132.99	\$146.43	\$88.77	\$136.39	\$151.80	\$89.46			✓
AGGREGATE MEAN FOR ALL SURGICAL PROCEDURES			3595	1997	\$245.49	\$306.03	\$168.39	\$248.57	\$801.73	\$239.85		✓	

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL RESOURCE COSTS FOR AMBULATORY SURGICAL PROCEDURES, NOT FEE AND ASC											Statistical Significance (90 percent)		
SURGICAL PROCEDURES			Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
APG#	2	APG & CPT DESCRIPTION	SUPERFICIAL NEEDLE BIOPSY & ASPIRATION										
CPT CODE	19000	Puncture aspiration of cyst of br	10	5	\$217.83	\$227.68	\$195.65	\$127.41	\$72.66	\$166.41			✓
CPT CODE	19100	Biopsy of breast, needle (separ	6	7	\$491.29	\$427.40	\$411.84	\$527.95	\$252.85	\$259.21			✓
CPT CODE	60100	Biopsy, thyroid, percutaneous n	2	1	\$327.33	\$757.03	\$327.33	N.A.	\$68.41	N.A.			✓
APG#	3	APG & CPT DESCRIPTION	SIMPLE INCISION & DRAINAGE										
CPT CODE	10000	Incision and drainage of infecte	17	7	\$356.28	\$400.77	\$357.36	\$318.63	\$111.43	\$198.17			✓
CPT CODE	10060	Incision and drainage of absces	19	11	\$391.39	\$430.02	\$380.04	\$322.20	\$103.41	\$330.00			✓
CPT CODE	10120	Incision & removal of foreign bo	18	15	\$367.08	\$424.35	\$381.52	\$358.91	\$141.51	\$167.62			✓
APG#	4	APG & CPT DESCRIPTION	COMPLEX INCISION AND DRAINAGE										
CPT CODE	10141	Incision and drainage of hemat	15	11	\$539.11	\$578.54	\$499.67	\$541.10	\$186.89	\$199.56			✓
CPT CODE	10180	Incision and drainage, complex,	15	9	\$574.38	\$586.07	\$556.66	\$548.62	\$177.78	\$259.74			✓
CPT CODE	23931	Incision and drainage, upper arm	11	5	\$547.01	\$494.41	\$451.93	\$392.76	\$253.78	\$220.94			✓
CPT CODE	28002	Deep dissection below fascia, f	10	4	\$495.38	\$447.10	\$526.86	\$396.42	\$124.84	\$218.43			✓
APG#	5	APG & CPT DESCRIPTION	COMPLEX INCISION AND DRAINAGE										
CPT CODE	11700	Debridement of nails, manual, fi	14	6	\$253.78	\$319.50	\$234.73	\$310.59	\$49.76	\$113.49			✓
CPT CODE	11701	Debridement of nails, manual, e	15	6	\$291.40	\$358.86	\$285.30	\$360.67	\$69.13	\$129.13			✓
APG#	6	APG & CPT DESCRIPTION	SIMPLE DEBRIDEMENT & DESTRUCTION										
CPT CODE	11040	Debridement of skin, partial thic	14	10	\$419.83	\$463.08	\$408.53	\$435.67	\$157.58	\$194.44			✓
CPT CODE	11730	Avulsion of nail plate, partial or	16	10	\$322.46	\$341.26	\$286.24	\$262.61	\$207.11	\$163.65			✓
CPT CODE	17000	Destruction by any method, with	10	9	\$346.52	\$467.74	\$333.07	\$463.19	\$88.91	\$306.79			✓
CPT CODE	20670	Removal of implant; superficial,	17	15	\$569.83	\$575.40	\$562.90	\$500.29	\$185.34	\$221.57			✓
APG#	7	APG & CPT DESCRIPTION	SIMPLE EXCISION & BIOPSY										
CPT CODE	11401	Excision, benign lesion, except	24	13	\$364.38	\$445.33	\$355.70	\$502.31	\$120.45	\$159.05		✓	
CPT CODE	11440	Excision, other benign lesion (ul	26	16	\$387.46	\$433.20	\$367.59	\$432.58	\$131.65	\$155.88			✓
CPT CODE	11601	Excision, malignant lesion; trun	25	12	\$381.28	\$429.72	\$371.80	\$429.20	\$116.73	\$144.07			✓
CPT CODE	11642	Excision, malignant lesion, face	26	15	\$417.39	\$473.14	\$384.95	\$478.36	\$135.56	\$146.33			✓
APG#	8	APG & CPT DESCRIPTION	COMPLEX EXCISION, BIOPSY & DEBRIDEMENT										
CPT CODE	11404	Excision, benign lesion, except	17	18	\$402.79	\$455.64	\$394.25	\$473.17	\$142.70	\$200.12			✓
CPT CODE	11406	Excision, benign lesion, except	18	19	\$388.11	\$484.02	\$389.30	\$516.14	\$106.56	\$187.46		✓	
CPT CODE	11643	Excision, malignant, lesion, face	16	12	\$424.82	\$456.96	\$398.34	\$422.48	\$131.11	\$150.96			✓
APG#	9	APG & CPT DESCRIPTION	LIPECTOMY & EXCISION WITH RECONSTRUCTION										
CPT CODE	15839	Excision, excessive skin and su	12	6	\$565.71	\$747.07	\$514.32	\$789.99	\$177.87	\$249.59		✓	
CPT CODE	15972	Excision, leg pressure ulcer, wit	13	4	\$764.22	\$637.24	\$685.86	\$590.14	\$354.48	\$148.43			✓
CPT CODE	37735	Ligation and division and compl	9	4	\$866.46	\$885.84	\$858.95	\$780.84	\$210.24	\$275.29			✓
APG#	10	APG & CPT DESCRIPTION	SIMPLE SKIN REPAIR										
CPT CODE	12001	Simple repair of superficial wou	21	6	\$332.51	\$445.84	\$338.36	\$432.38	\$123.61	\$205.92			✓
CPT CODE	12002	Simple repair of superficial wou	20	7	\$359.41	\$463.47	\$370.34	\$398.16	\$110.64	\$208.81			✓
CPT CODE	12031	Layer closure of wounds of scal	14	7	\$396.25	\$532.94	\$380.13	\$551.84	\$139.77	\$246.97			✓
APG#	11	APG & CPT DESCRIPTION	COMPLEX SKIN REPAIR										
CPT CODE	12015	Simple repair or superficial wou	13	5	\$349.12	\$434.12	\$354.85	\$343.15	\$119.96	\$204.50			✓
CPT CODE	12017	Simple repair or superficial wou	13	5	\$401.74	\$528.91	\$375.90	\$407.52	\$132.53	\$246.24			✓
CPT CODE	12054	Layer closure of wounds of face	13	4	\$489.57	\$450.98	\$441.19	\$362.40	\$217.94	\$241.58			✓

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	CPT CODE	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
APG#	15822	Blepharoplasty, upper eyelid	13	16	\$575.77	\$640.36	\$585.48	\$683.27	\$197.78	\$168.63			✓
APG#	12	SKIN & INTEGUMENT GRAFT, TRANSFER & REARRANGEMENT											
CPT CODE	14060	Adjacent tissue transfer or rearr	13	12	\$674.60	\$720.01	\$685.62	\$707.99	\$177.13	\$270.87			✓
CPT CODE	15100	Split graft, trunk, scalp, arms, le	15	11	\$724.82	\$859.97	\$745.56	\$686.16	\$164.61	\$462.51			✓
CPT CODE	15260	Full thickness graft, free, includ	14	9	\$777.17	\$874.32	\$739.43	\$856.00	\$214.93	\$220.75			✓
APG#	27	SIMPLE INCISION & EXCISION OF BREAST											
CPT CODE	19101	Biopsy of breast, incisional	28	16	\$526.53	\$570.84	\$527.05	\$558.46	\$129.53	\$191.00			✓
CPT CODE	19120	Excision or cyst, fibroadenoma,	31	23	\$542.56	\$613.05	\$497.41	\$613.59	\$166.87	\$235.53			✓
APG#	28	BREAST RECONSTRUCTION & MASTECTOMY											
CPT CODE	19140	Mastectomy for gynecomastia th	15	12	\$665.71	\$649.52	\$569.03	\$612.22	\$278.17	\$189.04			✓
CPT CODE	19160	Mastectomy, partial	16	10	\$719.07	\$654.00	\$653.01	\$699.80	\$256.74	\$176.90			✓
CPT CODE	19182	Mastectomy, subcutaneous	14	7	\$620.15	\$850.81	\$558.80	\$772.02	\$203.85	\$450.69			✓
APG#	53	OCCUPATIONAL THERAPY											
CPT CODE	97540	Training in activities of daily livi	15	0	\$85.22	N.A.	\$58.22	N.A.	\$45.41	N.A.			N.A.
CPT CODE	97541	Training in activities of daily livi	11	0	\$48.27	N.A.	\$38.42	N.A.	\$32.33	N.A.			N.A.
APG#	54	PHYSICAL THERAPY											
CPT CODE	97010	Physical medicine treatment to c	16	0	\$54.72	N.A.	\$50.42	N.A.	\$25.42	N.A.			N.A.
CPT CODE	97128	Physical medicine treatment to c	15	0	\$53.58	N.A.	\$46.31	N.A.	\$17.23	N.A.			N.A.
APG#	55	DIAGNOSTIC ARTHROSCOPY											
CPT CODE	29815	Arthroscopy, shoulder, diagnost	16	14	\$810.56	\$1,099.42	\$715.81	\$736.47	\$359.06	\$1,308.15			✓
CPT CODE	29870	Arthroscopy, knee, diagnostic, w	19	17	\$707.53	\$846.86	\$673.06	\$760.50	\$183.05	\$336.89			✓
APG#	56	THERAPEUTIC ARTHROSCOPY											
CPT CODE	29877	Arthroscopy, knee, surgical deb	29	16	\$791.22	\$920.99	\$781.78	\$885.84	\$218.69	\$310.68			✓
CPT CODE	29881	Arthroscopy, knee, surgical with	30	17	\$867.37	\$919.02	\$884.03	\$853.40	\$230.59	\$332.09			✓
APG#	57	REPLACEMENT OF CAST											
CPT CODE	29075	Application elbow to finger (sho	14	5	\$308.53	\$386.42	\$313.45	\$265.96	\$159.38	\$247.63			✓
CPT CODE	29405	Application or short leg cast (be	8	5	\$410.22	\$420.46	\$438.33	\$299.25	\$179.08	\$208.54			✓
APG#	58	SPLINT, STRAPPING & CAST REMOVAL											
CPT CODE	29125	Application of short arm splint (f	14	6	\$308.62	\$373.21	\$302.93	\$325.26	\$149.42	\$203.40			✓
CPT CODE	29580	Strapping unna boot	4	1	\$115.40	\$228.13	\$117.28	N.A.	\$59.77	N.A.			✓
APG#	59	TREATMENT OF CLOSED FRACTURE & DISLOCATION OF FINGER, TOE & RIB											
CPT CODE	21800	Treatment of rib fracture, closed	6	0	\$188.65	N.A.	\$174.60	N.A.	\$122.56	N.A.			N.A.
CPT CODE	26720	Treatment of closed phalangeal	15	7	\$294.36	\$307.69	\$300.89	\$287.86	\$110.89	\$133.24			✓
APG#	60	TREATMENT OF CLOSED FRACTURE & DISLOCATION EXCEPT FINGER, TOE & RIB											
CPT CODE	25600	Treatment of closed distal radial	15	7	\$384.00	\$464.49	\$373.32	\$448.88	\$107.92	\$165.00			✓
CPT CODE	25605	Treatment of closed distal radial	15	8	\$438.01	\$411.05	\$393.57	\$343.34	\$182.06	\$168.13			✓
CPT CODE	28470	Treatment of closed metatarsal	10	5	\$276.05	\$311.66	\$226.85	\$231.32	\$182.90	\$260.31			✓
APG#	62	TREATMENT OF OPEN FRACTURE & DISLOCATION EXCEPT FACE											
CPT CODE	25615	Treatment of open distal radial f	13	4	\$828.75	\$696.98	\$779.65	\$600.85	\$251.10	\$256.93			✓
CPT CODE	25620	Open treatment of closed or op	15	7	\$810.08	\$619.53	\$861.07	\$635.22	\$316.87	\$166.69			✓
CPT CODE	26735	Open treatment of closed or op	16	8	\$761.72	\$748.62	\$728.65	\$652.49	\$266.17	\$363.25			✓
APG#	63	JOINT MANIPULATION UNDER ANESTHESIA											

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	23700 Manipulation under anesthesia,	12	14	\$357.95	\$403.22	\$325.16	\$393.45	\$104.81	\$138.06			✓
CPT CODE	27570 Manipulation of knee joint under	13	11	\$335.35	\$432.09	\$312.54	\$392.18	\$109.17	\$152.17		✓	
APG#	64 SIMPLE MAXILLOFACIAL PROCEDURES											
CPT CODE	30000 Drainage of hematoma, nasal, in	12	5	\$440.12	\$476.52	\$441.17	\$393.84	\$124.76	\$183.48			✓
CPT CODE	30110 Excision, nasal polyp(s), simple	14	7	\$483.00	\$528.78	\$440.92	\$462.25	\$167.09	\$259.34			✓
CPT CODE	30111 Excision, nasal polyp(s), simple	14	6	\$567.64	\$512.67	\$539.45	\$413.55	\$161.72	\$216.77			✓
CPT CODE	31020 Sinusotomy, maxillary (antrotom	13	12	\$640.98	\$797.42	\$517.30	\$678.23	\$327.10	\$447.43			✓
APG#	65 COMPLEX MAXILLOFACIAL PROCEDURES											
CPT CODE	30520 Septoplasty or submucous rese	18	21	\$695.48	\$844.11	\$650.03	\$758.65	\$189.33	\$367.46			✓
CPT CODE	30620 Reconstruction, functional, inter	14	13	\$740.84	\$852.40	\$646.96	\$723.50	\$266.94	\$319.87			✓
APG#	66 INCISION OF BONE, JOINT, & TENDON											
CPT CODE	25000 Tendon sheath incision at radial	15	19	\$502.08	\$510.56	\$501.44	\$487.80	\$188.57	\$165.72			✓
CPT CODE	28270 Capsulotomy for contracture, m	16	9	\$605.14	\$610.55	\$503.36	\$491.95	\$307.42	\$261.45			✓
APG#	67 BUNION PROCEDURES										✓	
CPT CODE	28290 Hallux valgus (bunion) correctio	16	19	\$612.89	\$797.25	\$580.27	\$826.50	\$166.34	\$387.21			✓
CPT CODE	28292 Hallux valgus (bunion) correctio	16	15	\$632.46	\$723.16	\$586.93	\$678.19	\$260.84	\$306.30			✓
APG#	68 EXCISION OF BONE, JOINT & TENDON OF THE HAND & FOOT											
CPT CODE	26160 Excision or lesion of tendon she	19	21	\$461.33	\$501.82	\$409.40	\$507.31	\$193.23	\$200.93			✓
CPT CODE	28080 Excision of interdigital (Morton)	16	18	\$561.18	\$611.25	\$499.37	\$594.18	\$251.24	\$223.08			✓
APG#	69 EXCISION OF BONE, JOINT & TENDON EXCEPT HAND & FOOT											
CPT CODE	24105 Excision, olecranon bursa	14	14	\$545.37	\$571.51	\$482.86	\$520.26	\$168.15	\$194.51			✓
CPT CODE	27345 Excision of synovial cyst of popi	13	12	\$603.00	\$589.53	\$496.70	\$579.81	\$369.81	\$186.30			✓
APG#	70 ARTHROPLASTY											
CPT CODE	25447 Interposition arthroplasty, inter	14	7	\$655.29	\$541.36	\$555.36	\$491.37	\$267.68	\$98.89			✓
CPT CODE	26535 Arthroplasty interphalangeal joi	15	9	\$577.12	\$506.11	\$528.60	\$468.33	\$187.35	\$146.05			✓
APG#	71 HAND & FOOT TENOTOMY											
CPT CODE	26455 Tenotomy, flexor, single, finger	16	12	\$452.54	\$470.73	\$410.68	\$467.77	\$172.95	\$202.53			✓
CPT CODE	28234 Tenotomy, open, extensor, foot	12	7	\$542.51	\$632.93	\$494.53	\$394.78	\$300.01	\$379.17			✓
APG#	72 SIMPLE HAND & FOOT REPAIR EXCEPT TENOTOMY											
CPT CODE	26055 Tendon sheath incision for trig	28	19	\$442.00	\$468.24	\$421.84	\$494.70	\$179.25	\$157.57			✓
CPT CODE	28285 Hammer toe operation, one tow	24	17	\$681.64	\$671.84	\$660.19	\$605.29	\$161.88	\$273.23			✓
APG#	73 COMPLEX HAND & FOOT REPAIR											
CPT CODE	26860 Arthrodesis, interphalangeal joint	18	12	\$730.69	\$768.93	\$696.67	\$652.55	\$351.64	\$327.96			✓
CPT CODE	28810 Amputation, metatarsal, with toe	18	8	\$495.31	\$581.56	\$463.79	\$491.50	\$138.59	\$291.27			✓
APG#	74 REPAIR, EXCEPT ARTHROTOMY, OF BONE, JOINT, TENDON EXCEPT OF HAND & FOOT											
CPT CODE	23420 Repair of complete shoulder (ro	11	11	\$924.70	\$1,101.49	\$894.96	\$1,019.27	\$533.89	\$457.30			✓
CPT CODE	25260 Repair, tendon or muscle, flexor	14	12	\$638.81	\$712.44	\$530.89	\$583.28	\$361.28	\$464.83			✓
APG#	75 ARTHROTOMY EXCEPT OF HAND & FOOT											
CPT CODE	27332 Arthrotomy, knee, for excision o	12	4	\$633.18	\$572.09	\$638.54	\$559.75	\$155.46	\$75.50			✓
CPT CODE	27333 Arthrotomy, knee, for excision o	11	4	\$574.18	\$577.28	\$574.18	\$577.27	\$174.49	\$86.57			✓
APG#	76 ARTHROCENTESIS & LIGAMENT OR TENDON INJECTION											
CPT CODE	20550 Injection, tendon sheath, ligame	7	9	\$341.49	\$364.25	\$334.57	\$352.36	\$227.05	\$192.38			✓

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	20605 Arthrocentesis, aspiration and/or	12	5	\$425.80	\$407.92	\$387.72	\$362.35	\$218.43	\$223.85			✓
CPT CODE	20610 Arthrocentesis, aspiration and/or	11	5	\$451.41	\$344.60	\$324.67	\$353.06	\$331.37	\$105.41			✓
APG#	77 SPEECH THERAPY											
CPT CODE	92507 Speech, language or hearing th	13	0	\$89.46	N.A.	\$87.98	N.A.	\$62.78	N.A.			N.A.
CPT CODE	92508 Speech, language or hearing th	3	0	\$79.51	N.A.	\$73.95	N.A.	\$11.08	N.A.			N.A.
APG#	79 PULMONARY TEST & THERAPY EXCEPT SPIROMETRY											
CPT CODE	94650 Intermittent positive pressure br	12	0	\$35.23	N.A.	\$34.02	N.A.	\$17.45	N.A.			N.A.
CPT CODE	94760 Noninvasive ear or pulse oximet	16	0	\$27.83	N.A.	\$20.33	N.A.	\$35.04	N.A.			N.A.
APG#	80 NEEDLE & CATHETER BIOPSY, ASPIRATION, LAVAGE & INTUBATION											
CPT CODE	32000 Thoracentesis, puncture or pleu	11	1	\$394.34	\$393.29	\$415.30	N.A.	\$106.67	N.A.			✓
CPT CODE	32405 Biopsy, lung or mediastinum, pe	6	0	\$568.12	N.A.	\$587.61	N.A.	\$249.24	N.A.			N.A.
APG#	81 SIMPLE ENDOSCOPY OF THE UPPER AIRWAY											
CPT CODE	31505 Laryngoscopy, indirect (separat	12	6	\$308.48	\$416.00	\$587.61	\$422.08	\$108.33	\$166.51			✓
CPT CODE	31510 Laryngoscopy, indirect (separat	14	6	\$330.95	\$406.91	\$273.88	\$373.80	\$97.31	\$186.32			✓
APG#	82 COMPLEX ENDOSCOPY OF THE UPPER AIRWAY											
CPT CODE	31535 Laryngoscopy, direct, operative	16	11	\$427.86	\$469.17	\$407.21	\$496.89	\$102.76	\$145.19			✓
CPT CODE	31541 Laryngoscopy, direct, operative	15	10	\$461.82	\$519.26	\$461.95	\$507.05	\$102.08	\$183.25			✓
APG#	83 SIMPLE ENDOSCOPY OF THE LOWER AIRWAY											
CPT CODE	31622 Bronchoscopy diagnostic, (flexib	29	8	\$414.14	\$546.43	\$389.03	\$503.38	\$113.69	\$233.79			✓
CPT CODE	31625 Bronchoscopy with biopsy	30	4	\$432.38	\$466.50	\$406.13	\$397.19	\$136.04	\$243.30			✓
APG#	84 COMPLEX ENDOSCOPY OF THE LOWER AIRWAY										✓	
CPT CODE	31628 Bronchoscopy w/ transbronchi	24	2	\$505.32	\$724.35	\$513.10	\$724.35	\$162.16	\$130.26			✓
CPT CODE	31629 Bronchoscopy with transbronch	9	1	\$498.61	\$514.73	\$508.80	N.A.	\$103.32	N.A.			✓
APG#	85 NASAL CAUTERIZATION & PACKING											
CPT CODE	30901 Control nasal hemorrhage, ante	11	4	\$406.29	\$413.37	\$427.45	\$384.53	\$160.97	\$179.60			✓
CPT CODE	30903 Control nasal hemorrhage, ante	11	5	\$414.96	\$507.80	\$439.24	\$585.52	\$145.27	\$167.04			✓
APG#	86 SIMPLE LIP, MOUTH & SALIVARY GLAND PROCEDURES											
CPT CODE	41110 Excision of lesion of tongue with	12	6	\$428.09	\$405.66	\$424.56	\$413.54	\$103.80	\$73.48			✓
CPT CODE	41112 Excision of lesion of tongue with	13	4	\$467.05	\$373.11	\$469.50	\$345.83	\$145.31	\$76.91			✓
APG#	87 COMPLEX LIP, MOUTH, & SALIVARY GLAND PROCEDURES											
CPT CODE	40500 Vermilionectomy (lip shave), mu	8	4	\$406.38	\$424.37	\$386.57	\$401.20	\$83.98	\$147.73			✓
CPT CODE	42410 Excision of parotid tumor or par	13	5	\$837.94	\$663.71	\$750.97	\$542.72	\$256.79	\$307.08			✓
APG#	88 MISCELLANEOUS SINUS, TRACHEAL & LUNG PROCEDURES											
CPT CODE	31030 Sinusotomy, maxillary (antrotom	13	9	\$704.26	\$835.30	\$614.12	\$697.50	\$235.22	\$333.15			✓
CPT CODE	31200 Ethmoidectomy intranasal, ante	12	10	\$680.40	\$755.79	\$613.27	\$696.47	\$196.60	\$253.63			✓
APG#	105 EXERCISE TOLERANCE TESTS											
CPT CODE	93015 Cardiovascular stress test using	12	0	\$150.15	N.A.	\$108.48	N.A.	\$142.62	N.A.			N.A.
CPT CODE	93017 Cardiovascular stress test using	8	0	\$889.60	N.A.	\$88.28	N.A.	\$2,267.92	N.A.			N.A.
APG#	106 ECHOCARDIOGRAPHY											
CPT CODE	93307 Echocardiography, real-time wit	16	0	\$973.87	N.A.	\$103.61	N.A.	\$3,321.76	N.A.			N.A.
CPT CODE	93320 Doppler echocardiography, puls	13	0	\$87.06	N.A.	\$54.53	N.A.	\$120.22	N.A.			N.A.
APG#	108 CARDIAC ELECTROPHYSIOLOGIC TESTS											

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	92960 Cardioversion, electric	7	0	\$326.48	N.A.	\$245.32	N.A.	\$273.74	N.A.			N.A.
CPT CODE	93618 Induction of arrhythmia by elect	3	0	\$860.12	N.A.	\$794.20	N.A.	\$267.91	N.A.			N.A.
APG#	109 VASCULAR CANNULATION WITH NEEDLE & CATHETER											✓
CPT CODE	36489 Placement of central venous cat	10	2	\$438.34	\$1,022.49	\$485.56	\$1,022.49	\$187.28	\$496.18			N.A.
CPT CODE	36860 Cannula declotting without ballo	4	0	\$486.92	N.A.	\$533.88	N.A.	\$189.33	N.A.			N.A.
APG#	110 DIAGNOSTIC CARDIAC CATHETERIZATION											N.A.
CPT CODE	93547 Combined left heart catheterizat	10	0	\$3,604.62	N.A.	\$977.83	N.A.	\$8,857.02	N.A.			N.A.
CPT CODE	93549 Combined right and left heart ca	10	0	\$3,761.16	N.A.	\$1,138.49	N.A.	\$8,834.63	N.A.			N.A.
APG#	111 ANGIOPLASTY & TRANSCATHETER PROCEDURES											N.A.
CPT CODE	75963 Percutaneous transluminal angi	15	0	\$604.31	N.A.	\$578.83	N.A.	\$252.47	N.A.			N.A.
CPT CODE	92982 Percutaneous transluminal coro	7	0	\$1,685.42	N.A.	\$1,465.31	N.A.	\$601.63	N.A.			N.A.
APG#	112 PACEMAKER INSERTION & REPLACEMENT											N.A.
CPT CODE	33212 Insertion or replacement of pac	15	0	\$1,192.09	N.A.	\$723.70	N.A.	\$1,141.19	N.A.			N.A.
CPT CODE	33219 Repair of pacemaker with replac	13	0	\$861.05	N.A.	\$604.69	N.A.	\$683.69	N.A.			N.A.
APG#	113 REMOVAL & REVISION OF PACEMAKER & VASCULAR DEVICE											N.A.
CPT CODE	33216 Insertion, replacement, or repos	11	0	\$1,074.62	N.A.	\$494.33	N.A.	\$1,180.55	N.A.			✓
CPT CODE	36497 Removal of implantable intraver	11	7	\$455.22	\$549.86	\$425.43	\$460.33	\$264.63	\$296.22			✓
APG#	114 MINOR VASCULAR REPAIR & FISTULA CONSTRUCTION											✓
CPT CODE	35875 Thrombectomy and/or repair of	14	1	\$802.17	\$556.91	\$605.84	N.A.	\$392.44	N.A.			✓
CPT CODE	36495 Insertion of implantable intraver	15	6	\$612.87	\$771.41	\$611.30	\$642.93	\$177.14	\$478.73			✓
APG#	115 SECONDARY VARICOSE VEINS & VASCULAR INJECTION											✓
CPT CODE	37785 Ligation, division, and/or excisio	17	11	\$784.50	\$865.30	\$770.75	\$775.61	\$276.57	\$301.75			N.A.
CPT CODE	37799 Unlisted procedure, vascular su	1	1	\$228.98	\$668.29	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	116 VASCULAR LIGATION											N.A.
CPT CODE	37618 Ligation, major artery (e.g., post	10	0	\$702.49	N.A.	\$660.77	N.A.	\$299.46	N.A.			N.A.
CPT CODE	37650 Interrupting, partial or complete,	10	0	\$660.62	N.A.	\$563.14	N.A.	\$309.38	N.A.			N.A.
CPT CODE	37720 Ligation and division and compl	14	12	\$686.17	\$711.23	\$598.73	\$704.06	\$244.41	\$209.15			✓
APG#	117 CARDIOPULMONARY RESUSCITATION & INTUBATION											✓
CPT CODE	31500 Intubation, endotracheal, emerg	7	2	\$194.29	\$184.53	\$203.52	\$184.53	\$83.15	\$94.89			N.A.
CPT CODE	92950 Cardiopulmonary resuscitation (10	0	\$384.40	N.A.	\$342.72	N.A.	\$215.78	N.A.			N.A.
APG#	131 CHEMOTHERAPY BY INFUSION											N.A.
CPT CODE	96501 Chemotherapy injection, intrave	7	0	\$766.33	N.A.	\$402.33	N.A.	\$663.71	N.A.			N.A.
CPT CODE	96509 Chemotherapy injection, intrave	7	0	\$850.50	N.A.	\$795.69	N.A.	\$816.52	N.A.			N.A.
CPT CODE	96510 Chemotherapy inject, iv, comple	4	0	\$591.91	N.A.	\$498.06	N.A.	\$553.85	N.A.			N.A.
APG#	132 CHEMOTHERAPY EXCEPT BY INFUSION											N.A.
CPT CODE	96500 Chemotherapy injection, intrave	8	0	\$233.41	N.A.	\$190.10	N.A.	\$207.58	N.A.			N.A.
CPT CODE	96549 Unlisted chemotherapy procedu	1	0	\$19.37	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
APG#	133 TRANSFUSION & PHELEBOTOMY											✓
CPT CODE	36430 Transfusion, blood or blood com	8	1	\$229.55	\$249.36	\$217.75	N.A.	\$116.42	N.A.			N.A.
CPT CODE	36440 Push transfusion, blood, 2 years	2	0	\$241.78	N.A.	\$241.79	N.A.	\$20.65	N.A.			N.A.
APG#	135 DEEP LYMPH STRUCTURE & THYROID PROCEDURES											✓
CPT CODE	38510 Biopsy or excision of lymph nod	16	13	\$543.86	\$632.13	\$496.29	\$544.14	\$166.77	\$407.01			✓

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	38525 Biopsy or excision of lymph node	16	12	\$555.65	\$659.04	\$516.97	\$596.22	\$228.64	\$384.35			✓
APG#	157 ALIMENTARY TESTS AND SIMPLE TUBE PLACEMENT											
CPT CODE	91010 Esophageal motility study	3	0	\$174.91	N.A.	\$152.01	N.A.	\$65.90	N.A.			N.A.
CPT CODE	91030 Esophagus, acid perfusion (Ber)	2	0	\$136.09	N.A.	\$136.10	N.A.	\$20.33	N.A.			N.A.
APG#	158 ESOPHAGEAL DILATION WITHOUT ENDOSCOPY											
CPT CODE	43450 Dilatation of esophagus, by ungui	24	5	\$269.88	\$385.70	\$264.50	\$450.85	\$102.61	\$206.74			✓
CPT CODE	43451 Dilatation of esophagus, by ungui	20	6	\$259.84	\$373.30	\$236.84	\$393.09	\$99.98	\$197.58			✓
APG#	159 PERCUTANEOUS & OTHER SIMPLE GASTROINTESTINAL BIOPSY											
CPT CODE	47000 Biopsy of liver, percutaneous ne	9	2	\$447.45	\$280.42	\$416.13	\$280.42	\$242.19	\$111.89			✓
CPT CODE	49180 Biopsy, abdominal or retroperito	6	2	\$277.93	\$634.10	\$260.98	\$634.10	\$145.45	\$380.70			✓
CPT CODE	91000 Esophageal intubation and colle	2	0	\$230.18	N.A.	\$230.19	N.A.	\$23.33	N.A.			N.A.
APG#	160 ANOSCOPY WITH BIOPSY & DIAGNOSTIC PROCTOSIGMOIDOSCOPY											
CPT CODE	45300 Proctosigmoidoscopy diagnostic	10	4	\$216.51	\$253.20	\$222.66	\$266.20	\$96.68	\$118.74			✓
CPT CODE	45330 Sigmoidoscopy, flexible fiberopt	25	13	\$220.07	\$330.32	\$203.84	\$283.68	\$89.49	\$163.67		✓	
CPT CODE	46610 Anoscopy for removal of polyp	12	5	\$221.82	\$252.37	\$195.72	\$246.15	\$122.11	\$104.08			✓
APG#	161 PROCTOSIGMOIDOSCOPY WITH EXCISION OR BIOPSY											
CPT CODE	45331 Sigmoidoscopy, flexible fiberopt	23	10	\$250.67	\$315.32	\$232.02	\$259.26	\$97.03	\$138.93			✓
CPT CODE	45333 Sigmoidoscopy, flexible fiberopt	23	8	\$275.10	\$348.08	\$272.74	\$286.71	\$95.03	\$176.15			✓
APG#	162 DIAGNOSTIC UPPER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	43235 Upper GI endoscopy including e	24	12	\$301.42	\$391.40	\$316.48	\$297.68	\$81.76	\$201.84			✓
CPT CODE	43239 Upper GI endoscopy incl. esoph	27	13	\$343.54	\$390.89	\$351.73	\$315.07	\$99.40	\$142.40			✓
APG#	163 THERAPEUTIC UPPER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	43245 Upper GI endoscopy including e	13	5	\$320.07	\$430.88	\$319.95	\$481.99	\$100.36	\$141.59		✓	
CPT CODE	43246 Upper GI endoscopy including e	14	5	\$415.16	\$429.44	\$426.78	\$373.14	\$114.93	\$116.51			✓
APG#	164 DIAGNOSTIC LOWER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	45378 Colonoscopy, fiberoptic, beyond	27	13	\$345.41	\$386.07	\$347.91	\$316.39	\$134.69	\$188.28			✓
CPT CODE	45380 Colonoscopy, fiberoptic, beyond	27	14	\$389.89	\$464.39	\$390.13	\$459.25	\$137.68	\$193.84			✓
APG#	165 THERAPEUTIC LOWER GASTROINTESTINAL ENDOSCOPY											
CPT CODE	45383 Colonoscopy, fiberoptic, beyond	12	8	\$460.42	\$456.68	\$453.02	\$487.16	\$174.84	\$173.16			✓
CPT CODE	45385 Colonoscopy, fiberoptic, beyond	25	15	\$381.03	\$494.77	\$372.67	\$386.31	\$123.00	\$291.71			✓
APG#	166 ERCP & OTHER MISC. GASTROINTESTINAL ENDOSCOPY PROCEDURES											
CPT CODE	43260 Endoscopic retrograde cholangi	13	0	\$768.66	N.A.	\$705.83	N.A.	\$332.56	N.A.			N.A.
CPT CODE	44360 Small intestinal endoscopy beyo	9	3	\$363.28	\$241.70	\$345.37	\$238.08	\$130.38	\$93.01			✓
APG#	167 TONSIL & ADENOID PROCEDURES											
CPT CODE	42821 Tonsillectomy and adenoidectom	26	17	\$580.71	\$641.56	\$541.56	\$579.65	\$166.03	\$234.12			✓
CPT CODE	42826 Tonsillectomy, primary or secon	25	15	\$593.23	\$612.98	\$585.85	\$567.06	\$152.72	\$189.53			✓
APG#	168 HERNIA & HYDROCELE PROCEDURES											
CPT CODE	49505 Repair inguinal hernia, age 5 or	27	20	\$571.91	\$767.19	\$541.20	\$738.11	\$147.01	\$267.72		✓	
CPT CODE	49520 Repair inguinal hernia, any age	26	16	\$629.12	\$730.70	\$614.99	\$749.83	\$135.32	\$195.95		✓	
APG#	169 SIMPLE HEMORRHOID PROCEDURES											
CPT CODE	46230 Excision of external hemorrhoid	11	12	\$428.06	\$550.61	\$395.45	\$560.34	\$174.56	\$198.18			✓
CPT CODE	46934 Description of Hemorrhoids, any	11	10	\$471.59	\$544.96	\$402.82	\$548.32	\$204.18	\$166.37			✓

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL SOURCE COST BY CPT AND APG#											Statistical Significance (90 percent)		
SURGICAL PROCEDURES	APG#	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
HEMORRHOID PROCEDURES													
APG#	170	SIMPLE ANAL & RECTAL PROCEDURES EXCEPT											
CPT CODE	45915	Removal of fecal impaction or fec	5	2	\$382.02	\$330.69	\$399.07	\$330.69	\$92.23	\$147.52			✓
CPT CODE	46200	Fissurectomy, with or without sp	13	13	\$442.68	\$512.66	\$470.04	\$516.06	\$98.22	\$145.02			✓
COMPLEX ANAL & RECTAL PROCEDURES													
APG#	171	COMPLEX ANAL & RECTAL PROCEDURES											
CPT CODE	45170	Excision of Rectal tumor, transa	11	7	\$617.01	\$733.25	\$571.81	\$574.24	\$227.22	\$468.58			✓
CPT CODE	46255	Hemorrhoidectomy internal and	14	15	\$499.65	\$589.84	\$480.14	\$611.16	\$167.88	\$196.23			✓
PERITONEAL PROCEDURES & CHANGE OF INTRA-ABDOMINAL TUBE													
APG#	172	PERITONEAL PROCEDURES & CHANGE OF INTRA-ABDOMINAL TUBE											
CPT CODE	43760	Change of gastrostomy tube	12	3	\$247.18	\$267.99	\$222.32	\$225.02	\$155.56	\$143.03		✓	
CPT CODE	49080	Peritoneocentesis, abdominal pa	10	1	\$429.49	\$1,171.04	\$388.85	N.A.	\$259.21	N.A.			
MISC. DIGESTIVE PROCEDURES													
APG#	173	MISC. DIGESTIVE PROCEDURES											
CPT CODE	43750	Percutaneous placement of gas	9	3	\$416.31	\$530.29	\$442.38	\$499.52	\$139.28	\$185.85			✓
CPT CODE	49421	Insertion of intraperitoneal cann	6	0	\$515.91	N.A.	\$503.53	N.A.	\$97.17	N.A.			N.A.
SIMPLE URINARY STUDIES & PROCEDURES													
APG#	183	SIMPLE URINARY STUDIES & PROCEDURES											
CPT CODE	51720	Bladder instillation of antineopla	6	1	\$256.12	\$685.26	\$221.24	N.A.	\$104.77	N.A.		✓	
CPT CODE	51725	Simple cystometrogram (CMG)	7	0	\$251.32	N.A.	\$269.51	N.A.	\$89.23	N.A.			N.A.
CPT CODE	51736	Simple uroflowmetry (UFR) (e.g	3	0	\$174.02	N.A.	\$139.44	N.A.	\$89.15	N.A.			N.A.
RENAL EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY													
APG#	184	RENAL EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY											
CPT CODE	50590	Lithotripsy, extracorporeal shock	5	2	\$298.90	\$1,238.14	\$453.55	\$1,238.14	\$260.47	\$4.77		✓	
URINARY CATHETERIZATION & DILATATION													
APG#	185	URINARY CATHETERIZATION & DILATATION											
CPT CODE	51010	Aspiration of bladder, by trocar	9	1	\$384.22	\$797.32	\$390.73	N.A.	\$98.01	N.A.		✓	
CPT CODE	53660	Dilation of female urethra includ	9	3	\$378.20	\$406.39	\$359.84	\$419.66	\$120.98	\$94.23			✓
CPT CODE	53670	Catheterization, urethra simple	8	3	\$137.26	\$55.74	\$123.32	\$41.22	\$81.50	\$44.82			✓
HEMODIALYSIS													
APG#	186	HEMODIALYSIS											
CPT CODE	90935	Hemodialysis procedure with sir	5	0	\$532.77	N.A.	\$395.21	N.A.	\$266.34	N.A.			N.A.
CPT CODE	90937	Hemodialysis procedure requirir	2	0	\$568.20	N.A.	\$568.20	N.A.	\$161.84	N.A.			N.A.
PERITONEAL DIALYSIS													
APG#	187	PERITONEAL DIALYSIS											
CPT CODE	90945	Dialysis procedure other than he	4	0	\$581.67	N.A.	\$590.05	N.A.	\$562.98	N.A.			N.A.
CPT CODE	90947	Dialysis procedure other than he	1	0	\$1,246.95	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
SIMPLE CYSTOURETHROSCOPY													
APG#	188	SIMPLE CYSTOURETHROSCOPY											
CPT CODE	52000	Cystourethroscopy (separate pr	26	14	\$424.59	\$465.85	\$395.15	\$462.03	\$145.02	\$109.93			✓
CPT CODE	52281	Cystourethroscopy, with calibra	23	8	\$485.36	\$556.65	\$471.79	\$561.35	\$133.26	\$79.54			✓
COMPLEX CYSTOURETHROSCOPY & LITHOLAPAXY													
APG#	189	COMPLEX CYSTOURETHROSCOPY & LITHOLAPAXY											
CPT CODE	52224	Cystourethroscopy, w/ fulguratio	14	7	\$443.20	\$527.78	\$445.88	\$487.02	\$81.71	\$154.74			✓
CPT CODE	52234	Cystourethroscopy, w/fulguratio	22	6	\$506.04	\$507.28	\$485.57	\$486.90	\$104.75	\$106.58			✓
PERCUTANEOUS RENAL ENDOSCOPY, CATHETERIZATION & URETERAL END													
APG#	190	PERCUTANEOUS RENAL ENDOSCOPY, CATHETERIZATION & URETERAL END											
CPT CODE	50392	Introduction of intracatheter or c	5	0	\$536.72	N.A.	\$605.76	N.A.	\$206.44	N.A.			N.A.
CPT CODE	50393	Introduction of ureteral catheter	10	0	\$585.50	N.A.	\$565.79	N.A.	\$167.17	N.A.			N.A.
CPT CODE	50953	Ureteral endoscopy through est	8	1	\$582.72	\$643.56	\$530.89	N.A.	\$119.54	N.A.			✓
CYSTOTOMY													
APG#	191	CYSTOTOMY											
CPT CODE	51020	Cystotomy or cystostomy, with f	7	1	\$381.99	\$492.81	\$480.02	N.A.	\$202.15	N.A.			✓
CPT CODE	51040	Cystostomy, cystostomy with dra	8	2	\$370.86	\$531.91	\$340.01	\$531.91	\$98.57	\$193.20			✓
CPT CODE	51045	Cystostomy w/insertion of ureter	9	2	\$501.09	\$627.69	\$520.46	\$627.69	\$127.14	\$122.87			✓

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

TOTAL RESOURCE COSTS FOR AMBULATORY SURGICAL PROCEDURES											Statistical Significance (90 percent)		
SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference	
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC				
APG#	192	SIMPLE URETHRAL PROCEDURES											
CPT CODE	53200	Biopsy of urethra	12	4	\$453.14	\$552.73	\$453.28	\$527.49	\$131.14	\$187.21		✓	
CPT CODE	53265	Excision or fulguration; urethral	13	4	\$455.27	\$565.85	\$431.53	\$541.54	\$147.95	\$183.49		✓	
APG#	193	COMPLEX URETHRAL PROCEDURES											
CPT CODE	53220	Excision or fulguration of carcin	11	2	\$455.95	\$534.43	\$440.13	\$534.43	\$128.39	\$157.18		✓	
CPT CODE	53235	Excision of urethral diverticulum	11	1	\$526.90	\$614.24	\$437.40	N.A.	\$286.58	N.A.		✓	
APG#	209	TESTICULAR EPIDIDYMAL PROCEDURES											
CPT CODE	54520	Orchiectomy, simple, w/ or w/o	15	13	\$627.05	\$556.24	\$549.43	\$539.92	\$292.07	\$178.85		✓	
CPT CODE	54521	Orchiectomy, simple w/ or w/o t	13	6	\$666.51	\$580.34	\$548.29	\$592.02	\$319.93	\$200.57		✓	
APG#	210	INSERTION OF PENILE PROSTHESIS											
CPT CODE	54400	Insertion of penile prosthesis; nd	7	3	\$827.06	\$1,297.84	\$934.35	\$895.97	\$202.67	\$788.99		✓	
CPT CODE	54405	Insertion of inflatable (multi-com	6	4	\$775.59	\$2,022.50	\$739.30	\$1,640.46	\$214.16	\$1,460.66		✓	
APG#	211	COMPLEX PENILE PROCEDURES											
CPT CODE	54402	Removal or replacement of non	6	0	\$664.87	N.A.	\$670.30	N.A.	\$241.14	N.A.		N.A.	
CPT CODE	54407	Removal, repair or replacement	6	3	\$591.68	\$1,569.22	\$510.66	\$844.81	\$255.04	\$1,552.09		✓	
APG#	212	SIMPLE PENILE PROCEDURES											
CPT CODE	54152	Circumcision, clamp procedure	6	7	\$557.59	\$590.57	\$556.92	\$386.01	\$192.79	\$519.26		✓	
CPT CODE	54161	Circumcision, surgical excision	17	16	\$514.22	\$562.11	\$460.56	\$530.32	\$198.11	\$185.78		✓	
APG#	213	PROSTATE NEEDLE & PUNCH BIOPSY											
CPT CODE	55700	Biopsy, prostate needle or punc	24	6	\$376.30	\$421.00	\$362.69	\$440.88	\$107.45	\$123.70		✓	
CPT CODE	55705	Biopsy, prostate incisional, any	12	6	\$398.45	\$417.29	\$388.81	\$391.26	\$86.40	\$143.16		✓	
APG#	214	TRANSURETHRAL RESECTION OF PROSTATE & OTHER PROSTATE PROCEDURE											
CPT CODE	52500	Transurethral resection of blad	16	5	\$509.20	\$608.68	\$488.35	\$620.78	\$110.93	\$152.85		✓	
CPT CODE	52601	Transurethral resection or prost	13	1	\$614.86	\$1,015.86	\$601.08	\$1,015.86	\$268.86	N.A.		✓	
APG#	237	TREATMENT OF SPONTANEOUS ABORTION											
CPT CODE	59801	Treatment of spontaneous abor	10	9	\$368.74	\$371.48	\$330.22	\$315.36	\$113.31	\$144.20		✓	
CPT CODE	59820	Treatment of missed abortion, fi	13	15	\$390.47	\$419.12	\$373.44	\$422.21	\$97.48	\$120.88		✓	
APG#	238	THERAPEUTIC ABORTION											
CPT CODE	59840	Legal (therapeutic) abortion, by	9	7	\$397.42	\$370.24	\$362.16	\$319.45	\$138.13	\$171.00		✓	
CPT CODE	59841	Legal (therapeutic) abortion, by	6	6	\$431.33	\$376.59	\$401.75	\$328.13	\$124.91	\$129.81		✓	
APG#	240	FEMALE GENITAL ENDOSCOPY											
CPT CODE	58980	Laparoscopy for visualization of	21	19	\$706.05	\$754.38	\$625.58	\$698.72	\$250.05	\$205.44		✓	
CPT CODE	58985	Laparoscopy for visualization of	18	17	\$709.44	\$877.65	\$697.06	\$782.76	\$233.30	\$439.56		✓	
APG#	241	COLPOSCOPY											
CPT CODE	57452	Colposcopy (vaginoscopy); (sep	8	9	\$420.95	\$479.37	\$368.24	\$433.83	\$146.27	\$227.10		✓	
CPT CODE	57454	Colposcopy (vaginoscopy); with	11	6	\$439.26	\$388.33	\$437.96	\$352.34	\$132.36	\$233.90		✓	
APG#	242	MISC. FEMALE REPRODUCTIVE PROCEDURES											
CPT CODE	56600	Biopsy of vulva (separate proced	15	13	\$448.39	\$521.45	\$402.04	\$456.55	\$116.62	\$210.99		✓	
CPT CODE	57520	Biopsy of cervix, circumferential	17	21	\$437.54	\$528.32	\$429.84	\$502.95	\$86.33	\$171.08		✓	
APG#	243	DILATION & CURETTAGE											
CPT CODE	57820	Dilation and curettage of cervix	24	3	\$426.90	\$343.20	\$418.78	\$279.42	\$129.45	\$116.38		✓	
CPT CODE	58120	Dilation and curettage, diagnost	23	16	\$451.06	\$481.29	\$447.54	\$478.25	\$121.43	\$177.44		✓	

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs											Statistical Significance (90 percent)		
SURGICAL PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
APG#	244	FEMALE GENITAL EXCISION & REPAIR											
CPT CODE	56620	Vulvectomy, partial, unilateral or	9	7	\$536.85	\$538.72	\$505.71	\$522.70	\$124.34	\$171.01			✓
CPT CODE	57135	Excision of vaginal cyst or tumor	14	12	\$465.01	\$504.09	\$448.92	\$442.59	\$105.44	\$191.96			✓
APG#	261	ELECTROENCEPHALOGRAM											
CPT CODE	95819	Electroencephalogram (EEG) in	16	0	\$1,381.92	N.A.	\$166.84	N.A.	\$4,653.57	N.A.			N.A.
CPT CODE	95828	Polysomnography (recording, at	6	0	\$920.96	N.A.	\$873.26	N.A.	\$458.55	N.A.			N.A.
APG#	263	NERVE & MUSCLE TESTS											
CPT CODE	95900	Nerve conduction, velocity and/c	4	0	\$43.18	N.A.	\$32.49	N.A.	\$36.16	N.A.			N.A.
CPT CODE	95904	Nerve conduction, velocity and/c	7	0	\$44.31	N.A.	\$44.77	N.A.	\$30.73	N.A.			N.A.
APG#	264	INJECTION OF SUBSTANCE INTO SPINAL CORD											
CPT CODE	62278	Injection of anesthetic substance	7	7	\$243.13	\$270.96	\$215.82	\$287.39	\$72.57	\$88.21			✓
CPT CODE	62289	Injection of substance other than	3	6	\$256.84	\$295.16	\$231.22	\$289.55	\$83.38	\$83.42			✓
APG#	266	NERVE INJECTION & STIMULATION											
CPT CODE	64510	Injection, anesthetic agent; stell	4	9	\$262.39	\$271.96	\$245.90	\$272.21	\$97.41	\$98.08			✓
CPT CODE	64520	Injection, anesthetic agent; lum	7	5	\$288.65	\$393.63	\$261.29	\$328.37	\$127.76	\$230.19			✓
APG#	267	REVISION & REMOVAL OF NEUROLOGICAL DEVICE											
CPT CODE	63660	Revision or removal of spinal ne	3	1	\$576.26	\$345.85	\$520.80	N.A.	\$145.22	N.A.			✓
CPT CODE	63686	Revision or removal of spinal ne	4	1	\$511.87	\$470.26	\$487.36	N.A.	\$170.42	N.A.			✓
APG#	269	CARPAL TUNNEL RELEASE											
CPT CODE	64721	Neuroplasty and/or transposi	24	20	\$512.63	\$580.96	\$471.63	\$540.28	\$183.46	\$209.87			✓
APG#	270	NERVE REPAIR & DESTRUCTION											
CPT CODE	64718	Neuroplasty and/or transposi	13	12	\$649.42	\$837.77	\$577.28	\$831.86	\$348.22	\$352.79			✓
CPT CODE	64719	Neuroplasty and/or transposi	13	11	\$622.84	\$727.20	\$481.11	\$655.58	\$290.43	\$263.13			✓
APG#	271	COMPLEX NERVE REPAIR											
CPT CODE	64831	Suture of digital nerve, hand or f	11	7	\$828.59	\$696.86	\$635.60	\$495.13	\$817.27	\$389.35			✓
CPT CODE	64834	Suture of one nerve, hand or foot	9	6	\$568.47	\$634.61	\$578.79	\$575.00	\$139.30	\$244.81			✓
APG#	272	SPINAL TAP											
CPT CODE	62270	Spinal puncture, lumbar, diagno	9	0	\$189.98	N.A.	\$186.25	N.A.	\$73.83	N.A.			N.A.
CPT CODE	62272	Spinal puncture, therapeutic, for	3	0	\$204.03	N.A.	\$168.26	N.A.	\$83.09	N.A.			N.A.
APG#	289	SIMPLE LASER EYE PROCEDURES											
CPT CODE	65855	Trabeculectomy by laser surgen	10	3	\$367.16	\$108.82	\$386.27	\$125.71	\$138.53	\$35.09	✓		
CPT CODE	66821	Discission of secondary membra	12	12	\$666.58	\$384.70	\$678.37	\$268.42	\$202.62	\$266.39	✓		
APG#	290	COMPLEX LASER EYE PROCEDURES											
CPT CODE	67105	Repair of retinal detachment, on	4	4	\$939.87	\$989.74	\$645.35	\$1,137.58	\$767.12	\$686.49			✓
CPT CODE	67228	Destruction of extensive or prog	4	3	\$376.73	\$144.83	\$283.53	\$121.94	\$238.52	\$54.49			✓
APG#	291	CATARACT PROCEDURES											
CPT CODE	66850	Removal of lens material; phaco	19	9	\$586.73	\$715.51	\$520.35	\$717.43	\$259.55	\$239.22		✓	✓
CPT CODE	66940	Extraction of lens with or without	16	10	\$526.01	\$731.26	\$447.46	\$695.58	\$308.96	\$225.84			✓
CPT CODE	66983	Intracapsular cataract extraction	18	10	\$929.79	\$923.47	\$924.51	\$912.93	\$283.86	\$281.37			✓
CPT CODE	66984	Extracapsular cataract removal	22	23	\$947.52	\$935.87	\$910.40	\$937.96	\$260.67	\$312.13			✓
CPT CODE	66985	Insertion of intraocular lens sub	2	18	\$716.55	\$834.78	\$682.17	\$821.51	\$210.08	\$286.11			✓
APG#	292	SIMPLE ANTERIOR SEGMENT EYE PROCEDURES FOR GLAUCOMA											

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs											Statistical Significance (90 percent)		
SURGICAL PROCEDURES	CPT CODE	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher ASC Mean	No Significant Difference
			Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC			
	66500	Iridotomy by stab incision (sepa	5	4	\$451.32	\$354.71	\$428.28	\$349.49	\$181.76	\$72.22			✓
	66720	Cyclocryotherapy initial	2	5	\$364.74	\$464.35	\$364.74	\$440.55	\$131.83	\$153.21			✓
	293	COMPLEX ANTERIOR SEGMENT EYE PROCEDURES FOR GLAUCOMA											✓
	66150	Fistulization of sclera for glauco	3	3	\$408.17	\$699.40	\$393.22	\$735.03	\$101.46	\$229.47			✓
	66170	Fistulization of sclera for glauco	7	10	\$571.74	\$861.79	\$520.67	\$836.96	\$187.11	\$311.58		✓	
	294	SIMPLE ANTERIOR SEGMENT EYE PROCEDURES EXCEPT FOR GLAUCOMA											✓
	65450	Destruction of lesion of cornea t	3	4	\$266.94	\$368.21	\$274.41	\$381.07	\$33.30	\$106.22			✓
	66820	Discussion or secondary membra	5	4	\$641.42	\$514.44	\$576.78	\$470.71	\$412.53	\$218.99			✓
	295	MODERATE ANTERIOR SEGMENT EYE PROCEDURES											✓
	66625	Iridectomy, w/comboscleral or c	4	10	\$396.13	\$418.74	\$385.48	\$427.48	\$90.32	\$141.46			✓
	66830	Removal of secondary membra	8	1	\$557.12	\$696.82	\$487.04	N.A.	\$291.34	N.A.			✓
	296	COMPLEX ANTERIOR SEGMENT EYE PROCEDURES EXCEPT FOR GLAUCOMA										✓	
	65750	Keratoplasty, penetrating, includ	2	12	\$321.36	\$1,005.73	\$321.36	\$948.77	\$64.28	\$353.21			✓
	67010	Removal of vitreous, anterior ap	10	8	\$650.06	\$695.66	\$709.19	\$641.71	\$263.59	\$295.39			✓
	297	SIMPLE POSTERIOR SEGMENT EYE PROCEDURES											N.A.
	67208	Destruction of localized lesion o	3	0	\$528.24	N.A.	\$678.54	N.A.	\$303.93	N.A.			✓
	67227	Destruction of extensive or prog	2	2	\$469.93	\$360.80	\$469.93	\$360.80	\$364.59	\$20.92			✓
	298	COMPLEX POSTERIOR SEGMENT EYE PROCEDURES											✓
	67036	Vitrectomy, mechanical, pars pl	6	8	\$697.17	\$894.97	\$555.80	\$794.81	\$412.41	\$428.92			✓
	67101	Repair of retinal detachment, or	3	3	\$822.60	\$1,498.98	\$727.74	\$1,581.68	\$317.87	\$196.79		✓	
	299	STRABISMUS & MUSCLE EYE PROCEDURES											✓
	67311	Strabismus surgery on patient n	9	16	\$581.92	\$588.75	\$507.30	\$530.40	\$162.94	\$195.36			✓
	67312	Strabismus surgery on patient n	9	20	\$557.76	\$681.96	\$496.71	\$595.47	\$212.11	\$267.58			✓
	300	SIMPLE REPAIR & PLASTIC PROCEDURES OF EYE											✓
	67840	Excision of lesion of eye lid with	8	12	\$478.70	\$413.27	\$414.34	\$338.11	\$218.99	\$213.49			✓
	67921	Repair of entropion suture	10	14	\$505.66	\$568.47	\$424.06	\$598.33	\$325.54	\$165.24			✓
	301	COMPLEX REPAIR & PLASTIC PROCEDURES OF EYE											✓
	67904	Repair of blepharoptosis (tarsal)	9	15	\$672.11	\$618.05	\$466.28	\$595.58	\$355.11	\$278.50			✓
	68720	Dacryocystorhinostomy (fistuliz	9	11	\$1,037.73	\$1,025.75	\$1,068.77	\$925.66	\$417.73	\$435.13			✓
	313	OTORHINOLARYNGOLOGIC FUNCTION TESTS											N.A.
	92545	Oscillating tracking test, with re	1	0	\$89.89	N.A.	N.A.	N.A.	N.A.	N.A.			N.A.
	92585	Brainstem evoked response rec	7	0	\$1,546.36	N.A.	\$175.55	N.A.	\$3,478.70	N.A.			N.A.
	314	MAJOR EXTERNAL EAR PROCEDURES											✓
	69140	Excision exostosis (es), external	6	3	\$480.56	\$601.01	\$493.24	\$484.75	\$98.88	\$241.09			✓
	69310	Reconstruction of external audit	7	2	\$738.89	\$826.41	\$563.22	\$826.41	\$425.79	\$315.23			✓
	315	TYMPANOSTOMY & OTHER SIMPLE MIDDLE EAR PROCEDURES											✓
	69420	Myringotomy including aspiratio	13	11	\$391.29	\$386.53	\$371.97	\$340.55	\$145.64	\$142.62			✓
	69433	Tympanostomy (requiring insert	9	11	\$276.22	\$318.51	\$262.31	\$332.59	\$86.54	\$131.54			✓
	316	TYMPANOPLASTY & OTHER COMPLEX MIDDLE EAR PROCEDURES											✓
	69631	Tympanoplasty w/o mastoidect	11	8	\$733.91	\$775.03	\$714.66	\$660.57	\$310.34	\$292.13			✓
	69660	Stapedectomy with re-establish	8	4	\$948.73	\$879.83	\$862.57	\$775.72	\$439.53	\$360.50			✓
	318	SIMPLE AUDIOMETRY											✓

TOTAL RESOURCE COSTS FOR AMBULATORY SURGERY PROCEDURES, HOSPITALS AND ASCs

SURGICAL PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	ASC	Hospital	ASC	Hospital	ASC	Hospital	ASC	Higher Hospital Mean	Higher ASC Mean	No Significant Difference
CPT CODE	92557 Basic comprehensive audiometry	5	0	\$98.70	N.A.	\$77.50	N.A.	\$47.47	N.A.			N.A.
CPT CODE	92567 Tympanometry	5	0	\$26.44	N.A.	\$20.52	N.A.	\$15.59	N.A.			N.A.
APG#	319 REMOVAL OF IMPACTED CERUMEN											✓
CPT CODE	69210 Removal impacted cerumen (se	6	5	\$278.40	\$314.20	\$202.46	\$286.44	\$180.28	\$156.11			
AGGREGATE MEAN FOR ALL SURGICAL PROCEDURES		3654	2002	\$522.63	\$590.17	\$450.09	\$530.48	\$838.17	\$336.92		✓	

TOTAL DIRECT RESOURCE COSTS FOR RADIOLOGY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

RADIOLOGY PROCEDURES	APG#	CPT CODE	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
				Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
APG#	341		SIMPLE DIAGNOSTIC NUCLEAR MEDICINE											
CPT CODE	78308		Bone imaging; whole body	17	3	\$129.83	\$138.00	\$124.00	\$121.17	\$29.62	\$35.63			✓
APG#	342		COMPLEX DIAGNOSTIC NUCLEAR MEDICINE											
CPT CODE	78461		Myocardial perfusion imaging; exercise	16	3	\$316.74	\$267.66	\$311.44	\$268.83	\$152.58	\$33.85			✓
APG#	343		THERAPEUTIC NUCLEAR MEDICINE BY INJECTION											
CPT CODE	79100		Radionuclide therapy, polycythemia vera	6	1	\$378.67	\$85.17	\$278.20	N.A.	\$396.77	N.A.			✓
APG#	345		OBSTETRICAL ULTRASOUND											
CPT CODE	76805		Echography, pregnant uterus, B-scan and/or M-mode	21	5	\$54.72	\$33.90	\$49.08	\$29.36	\$37.65	\$20.24			✓
APG#	346		DIAGNOSTIC ULTRASOUND EXCEPT OBSTETRICAL											
CPT CODE	76519		Ophthalmic biometry by ultrasound echography	1	2	\$20.96	\$17.53	N.A.	\$17.53	N.A.	\$13.02			✓
CPT CODE	76700		Echography, abdominal, B-scan and/or M-mode	20	5	\$62.97	\$52.71	\$47.93	\$40.58	\$39.68	\$31.44			✓
APG#	348		MAGNETIC RESONANCE IMAGING											
CPT CODE	70551		Magnetic resonance (eg, proton) imaging; head, without contrast	12	2	\$201.32	\$166.65	\$212.40	\$166.65	\$109.85	\$162.50			✓
APG#	349		COMPUTERIZED AXIAL TOMOGRAPHY											
CPT CODE	70450		Computerized axial tomography; head of skull, without contrast	22	3	\$60.29	\$55.01	\$58.36	\$61.38	\$19.28	\$12.74			✓
CPT CODE	70470		Computerized axial tomography; head of skull, with contrast	20	3	\$165.70	\$125.61	\$157.34	\$101.67	\$91.91	\$53.18			✓
CPT CODE	74160		Computerized axial tomography; abdomen, without contrast	21	3	\$192.40	\$142.16	\$191.60	\$129.98	\$111.80	\$48.53			✓
APG#	350		MAMMOGRAPHY											
CPT CODE	76091		Mammography; bilateral	18	7	\$26.51	\$25.25	\$25.04	\$26.32	\$10.06	\$7.97			✓
APG#	351		PLAIN FILM											
CPT CODE	71010		Radiologic examination, chest; single view, posteroanterior	23	7	\$17.66	\$19.92	\$17.92	\$20.25	\$5.88	\$4.72			✓
CPT CODE	71020		Radiologic examination, chest; two views, posteroanterior	23	11	\$20.92	\$21.05	\$21.01	\$22.40	\$6.98	\$5.45			✓
CPT CODE	73510		Radiologic examination, hip, complete, non-weight bearing	22	10	\$21.66	\$22.08	\$21.37	\$23.12	\$7.05	\$7.19			✓
CPT CODE	73630		Radiologic examination, foot, anteroposterior	22	9	\$20.12	\$20.47	\$21.32	\$21.31	\$7.68	\$5.99			✓
APG#	352		FLUOROSCOPY											
CPT CODE	71023		Radiologic examination, chest, two views, posteroanterior	9	4	\$40.51	\$53.92	\$42.53	\$46.71	\$24.20	\$27.75			✓
APG#	353		CEREBRAL, PULMONARY, CERVICAL & SPINAL ANGIOGRAPHY											
CPT CODE	75673		Angiography, carotid, cerebral, bilateral, without contrast	14	0	\$374.34	N.A.	\$366.52	N.A.	\$135.04	N.A.			N.A.
APG#	354		VENOGRAPHY OF EXTREMITY											
CPT CODE	75821		Venography, extremity, unilateral, complete, without contrast	19	2	\$118.83	\$74.10	\$96.77	\$74.10	\$72.15	\$2.05			✓
APG#	355		NON-CARDIAC, NON-CEREBRAL VASCULAR RADIOLOGY											
CPT CODE	75631		Aortography, abdominal plus bilateral iliofemoral	17	0	\$358.63	N.A.	\$353.24	N.A.	\$91.67	N.A.			N.A.
APG#	356		DIGESTIVE RADIOLOGY											
CPT CODE	74240		Radiologic examination, gastrointestinal tract, without contrast	17	5	\$55.67	\$59.35	\$54.09	\$52.18	\$23.25	\$24.07			✓
CPT CODE	74270		Radiologic examination, colon; barium enema, without contrast	20	6	\$90.13	\$83.90	\$93.15	\$86.80	\$25.62	\$19.88			✓
CPT CODE	74280		Radiologic examination, colon; air contrast, without contrast	21	6	\$111.57	\$107.87	\$116.87	\$111.05	\$36.34	\$24.40			✓
APG#	357		UROGRAPHY & GENITAL RADIOLOGY											
CPT CODE	74400		Urography (pyelography), intravenous, without contrast	17	4	\$90.03	\$73.41	\$88.03	\$64.64	\$45.76	\$19.07			✓
CPT CODE	74415		Urography, infusion, drip technique and/or voiding, without contrast	17	3	\$107.40	\$78.92	\$91.74	\$65.84	\$72.84	\$33.53			✓
APG#	358		ARTHROGRAPHY											
CPT CODE	73041		Radiologic examination, shoulder, arthrography, without contrast	17	5	\$86.30	\$66.52	\$79.85	\$63.42	\$53.07	\$25.03			✓
APG#	359		MYELOGRAPHY											

TOTAL DIRECT RESOURCE COSTS FOR RADIOLOGY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

		Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
RADIOLOGY PROCEDURES	APG & CPT DESCRIPTION											
	CPT CODE 72266 Myelography, lumbosacral; complete procedure	16	1	\$97.81	\$67.88	\$92.79	N.A.	\$41.96	N.A.			✓
	APG# 360 MISCELLANEOUS RADIOLOGY											
	CPT CODE 76089 Mammary ductogram or galactogram, mammography	6	0	\$71.06	N.A.	\$58.17	N.A.	\$31.97	N.A.			N.A.
AGGREGATE MEAN FOR ALL RADIOLOGY PROCEDURES		456	110	\$113.19	\$61.52	\$73.54	\$40.47	\$125.34	\$57.52	✓		

TOTAL INDIRECT RESOURCE COSTS FOR RADIOLOGY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES														
RADIOLOGY PROCEDURES		APG & CPT DESCRIPTION		Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
				Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off Mean	No Significant Difference
APG#	341	SIMPLE DIAGNOSTIC NUCLEAR MEDICINE												
CPT CODE	78306	Bone imaging, whole body		17	3	\$121.01	\$157.86	\$91.03	\$66.68	\$84.83	\$186.76			✓
APG#	342	COMPLEX DIAGNOSTIC NUCLEAR MEDICINE												
CPT CODE	78461	Myocardial perfusion imaging, exercise		15	3	\$240.76	\$163.87	\$182.04	\$165.64	\$177.42	\$117.39			✓
APG#	343	THERAPEUTIC NUCLEAR MEDICINE BY INJECTION												
CPT CODE	79100	Radionuclide therapy, polycythemia vera		6	1	\$31.79	\$41.41	\$30.33	N.A.	\$16.68	N.A.			✓
APG#	345	OBSTETRICAL ULTRASOUND												
CPT CODE	76805	Echography, pregnant uterus, B-scan and/or		20	5	\$98.21	\$104.62	\$70.23	\$69.91	\$75.59	\$86.51			✓
APG#	346	DIAGNOSTIC ULTRASOUND EXCEPT OBSTETRICAL												
CPT CODE	76519	Ophthalmic biometry by ultrasound and echog		1	2	\$39.83	\$52.14	N.A.	\$52.14	N.A.	\$14.11			✓
CPT CODE	76700	Echography, abdominal, B-scan and/or		19	5	\$82.54	\$71.91	\$57.32	\$58.62	\$56.16	\$47.80			✓
APG#	348	MAGNETIC RESONANCE IMAGING												
CPT CODE	70551	Magnetic resonance (eg, proton) imaging		11	2	\$147.67	\$135.34	\$96.31	\$135.34	\$129.66	\$159.96			✓
APG#	349	COMPUTERIZED AXIAL TOMOGRAPHY												
CPT CODE	70450	Computerized axial tomography; head and		22	3	\$40.70	\$44.82	\$26.63	\$50.11	\$38.23	\$20.46			✓
CPT CODE	70470	Computerized axial tomography; head and		19	3	\$66.22	\$55.06	\$40.46	\$60.13	\$63.48	\$30.61			✓
CPT CODE	74160	Computerized axial tomography; abdomen		20	3	\$77.75	\$82.59	\$56.89	\$90.19	\$69.12	\$45.92			✓
APG#	350	MAMMOGRAPHY												
CPT CODE	76091	Mammography; bilateral		17	7	\$40.13	\$31.37	\$21.21	\$21.99	\$32.38	\$24.13			✓
APG#	351	PLAIN FILM												
CPT CODE	71010	Radiologic examination, chest; single view		22	7	\$10.88	\$6.94	\$6.93	\$6.01	\$11.15	\$3.82			✓
CPT CODE	71020	Radiologic examination, chest; two views		22	10	\$12.96	\$9.25	\$9.46	\$7.29	\$11.23	\$5.36			✓
CPT CODE	73510	Radiologic examination, hip, complete, non		21	9	\$23.43	\$17.95	\$18.29	\$18.41	\$18.87	\$10.53			✓
CPT CODE	73630	Radiologic examination, foot; anteroposter		20	9	\$21.47	\$16.52	\$14.30	\$13.00	\$19.37	\$10.54			✓
APG#	352	FLUOROSCOPY												
CPT CODE	71023	Radiologic examination, chest, two views		8	4	\$36.06	\$40.32	\$24.26	\$29.04	\$33.27	\$35.56			✓
APG#	353	CEREBRAL, PULMONARY, CERVICAL & SPINAL ANGIOGRAPHY												
CPT CODE	75673	Angiography, carotid, cerebral, bilateral; c		14	0	\$206.09	N.A.	\$129.51	N.A.	\$183.40	N.A.			N.A.
APG#	354	VENOGRAPHY OF EXTREMITY												
CPT CODE	75821	Venography, extremity, unilateral, complete		18	2	\$59.04	\$92.18	\$39.89	\$92.18	\$44.03	\$45.33			✓
APG#	355	NON-CARDIAC, NON-CEREBRAL VASCULAR RADIOLOGY												
CPT CODE	75631	Aortography, abdominal plus bilateral ilioa		16	0	\$163.87	N.A.	\$117.78	N.A.	\$109.51	N.A.			N.A.
APG#	356	DIGESTIVE RADIOLOGY												
CPT CODE	74240	Radiologic examination, gastrointestinal		17	5	\$40.01	\$44.62	\$32.27	\$41.41	\$30.99	\$27.85			✓
CPT CODE	74270	Radiologic examination, colon; barium enema		20	6	\$61.74	\$55.18	\$47.11	\$41.49	\$41.67	\$35.41			✓
CPT CODE	74280	Radiologic examination, colon; air contrast		20	6	\$80.68	\$72.51	\$61.04	\$55.31	\$55.46	\$48.17			✓
APG#	357	UROGRAPHY & GENITAL RADIOLOGY												
CPT CODE	74400	Urography (pyelography), intravenous, void		16	4	\$71.89	\$65.42	\$58.75	\$52.05	\$45.33	\$40.73			✓
CPT CODE	74415	Urography, infusion, drip technique and		15	3	\$74.80	\$45.81	\$60.97	\$43.97	\$57.12	\$13.49			✓
APG#	358	ARTHROGRAPHY												
CPT CODE	73041	Radiologic examination, shoulder, arthrogr		16	5	\$59.67	\$47.25	\$45.65	\$43.97	\$38.78	\$33.98			✓
APG#	359	MYELOGRAPHY												

TOTAL INDIRECT RESOURCE COSTS FOR RADIOLOGY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES												
		Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital Mean	Phys. Off. Mean	No Significant Difference
RADIOLOGY PROCEDURES		APG & CPT DESCRIPTION										
CPT CODE	72266	Myelography, lumbosacral, complete procedure		15	1	\$71.09	\$124.23	\$50.94	N.A.	\$45.26	N.A.	✓
APG#	360	MISCELLANEOUS RADIOLOGY										
CPT CODE	76089	Mammary ductogram or galactogram, mammography		6	0	\$91.45	N.A.	\$80.28	N.A.	\$40.46	N.A.	N.A.
AGGREGATE MEAN FOR ALL RADIOLOGY PROCEDURES				435	108	\$74.76	\$51.64	\$45.82	\$34.20	\$88.46	\$60.02	✓

TOTAL RESOURCE COSTS FOR RADIOLOGY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

RADIOLOGY PROCEDURES	APG#	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher	Higher	No
											Hospital	Phys. Off.	Significant
											Mean	Mean	Difference
APG#	341	SIMPLE DIAGNOSTIC NUCLEAR MEDICINE											
CPT CODE	78306	Bone imaging; whole body	17	3	\$250.83	\$295.86	\$257.41	\$187.85	\$93.39	\$222.38			✓
APG#	342	COMPLEX DIAGNOSTIC NUCLEAR MEDICINE											
CPT CODE	78461	Myocardial perfusion imaging; exercise	16	3	\$542.45	\$431.52	\$471.58	\$434.47	\$301.42	\$83.59			✓
APG#	343	THERAPEUTIC NUCLEAR MEDICINE BY INJECTION											
CPT CODE	79100	Radionuclide therapy, polycythemia vera	6	1	\$410.46	\$126.58	\$309.72	N.A.	\$410.55	N.A.			✓
APG#	345	OBSTETRICAL ULTRASOUND											
CPT CODE	76805	Echography, pregnant uterus, B-scan ar	21	5	\$148.26	\$138.52	\$135.39	\$89.04	\$84.28	\$87.54			✓
APG#	346	DIAGNOSTIC ULTRASOUND EXCEPT OBSTETRICAL											
CPT CODE	76519	Ophthalmic biometry by ultrasound ech	1	2	\$60.79	\$69.67	N.A.	\$69.67	N.A.	\$1.08			✓
CPT CODE	76700	Echography, abdominal, B-scan and/or	20	5	\$141.38	\$124.62	\$141.24	\$147.62	\$63.85	\$64.28			✓
APG#	348	MAGNETIC RESONANCE IMAGING											
CPT CODE	70551	Magnetic resonance (eg, proton) imagin	12	2	\$336.68	\$302.00	\$359.96	\$302.00	\$180.11	\$322.46			✓
APG#	349	COMPUTERIZED AXIAL TOMOGRAPHY											
CPT CODE	70450	Computerized axial tomography; head o	22	3	\$100.98	\$99.83	\$90.46	\$113.42	\$46.72	\$32.65			✓
CPT CODE	70470	Computerized axial tomography; head o	20	3	\$228.61	\$180.67	\$203.72	\$148.73	\$123.82	\$77.82			✓
CPT CODE	74160	Computerized axial tomography; abdom	21	3	\$266.45	\$224.75	\$233.38	\$191.08	\$142.38	\$83.52			✓
APG#	350	MAMMOGRAPHY											
CPT CODE	76091	Mammography, bilateral	18	7	\$64.41	\$56.62	\$54.78	\$43.20	\$36.84	\$26.41			✓
APG#	351	PLAIN FILM											
CPT CODE	71010	Radiologic examination, chest; single vie	23	7	\$28.07	\$26.86	\$25.34	\$23.59	\$14.02	\$6.92			✓
CPT CODE	71020	Radiologic examination, chest; two view	23	11	\$33.31	\$29.46	\$30.42	\$26.52	\$15.51	\$9.27			✓
CPT CODE	73510	Radiologic examination, hip, complete, n	22	10	\$44.02	\$38.23	\$34.60	\$38.03	\$22.57	\$9.27			✓
CPT CODE	73630	Radiologic examination, foot; anteropost	22	9	\$39.64	\$36.99	\$34.29	\$39.35	\$24.47	\$8.28			✓
APG#	352	FLUOROSCOPY											
CPT CODE	71023	Radiologic examination, chest, two view	9	4	\$72.57	\$94.24	\$61.01	\$73.92	\$54.12	\$62.69			✓
APG#	353	CEREBRAL, PULMONARY, CERVICAL & SPINAL ANGIOGRAPHY											
CPT CODE	75673	Angiography, carotid, cerebral, bilateral;	14	0	\$580.42	N.A.	\$555.65	N.A.	\$247.48	N.A.			N.A.
APG#	354	VENOGRAPHY OF EXTREMITY											
CPT CODE	75821	Venography, extremity, unilateral, compl	19	2	\$174.76	\$166.28	\$166.14	\$166.28	\$96.59	\$43.27			✓
APG#	355	NON-CARDIAC, NON-CEREBRAL VASCULAR RADIOLOGY											
CPT CODE	75631	Arctography, abdominal plus bilateral ilio	17	0	\$512.86	N.A.	\$490.73	N.A.	\$158.51	N.A.			N.A.
APG#	356	DIGESTIVE RADIOLOGY											
CPT CODE	74240	Radiologic examination, gastrointestinal	17	5	\$95.68	\$103.96	\$90.69	\$96.97	\$40.57	\$41.61			✓
CPT CODE	74270	Radiologic examination, colon; barium en	20	6	\$151.87	\$139.08	\$151.18	\$136.47	\$51.20	\$40.67			✓
CPT CODE	74280	Radiologic examination, colon; air contr	21	6	\$188.41	\$180.39	\$183.27	\$173.30	\$75.49	\$61.42			✓
APG#	357	UROGRAPHY & GENITAL RADIOLOGY											
CPT CODE	74400	Urography (pyelography), intravenous, w	17	4	\$157.69	\$138.83	\$169.51	\$116.69	\$78.60	\$59.45			✓
CPT CODE	74415	Urography, infusion, drip technique and/	17	3	\$173.40	\$124.73	\$130.63	\$99.18	\$98.20	\$45.39			✓
APG#	358	ARTHROGRAPHY											
CPT CODE	73041	Radiologic examination, shoulder, arthro	17	5	\$144.46	\$113.77	\$138.58	\$128.52	\$75.75	\$52.96			✓
APG#	359	MYELOGRAPHY											

TOTAL RESOURCE COSTS FOR RADIOLOGY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES												
RADIOLOGY PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
CPT CODE 72266	Myelography, lumbosacral; complete procedure	16	1	\$164.45	\$192.11	\$158.88	N.A.	\$73.09	N.A.			✓
APG# 360	MISCELLANEOUS RADIOLOGY											
CPT CODE 76089	Mammary ductogram or galactogram, mammography	6	0	\$162.51	N.A.	\$152.73	N.A.	\$56.90	N.A.			N.A.
AGGREGATE MEAN FOR ALL RADIOLOGY PROCEDURES		456	110	\$184.51	\$112.22	\$129.72	\$80.00	\$186.13	\$105.59	✓		

TOTAL DIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

TOTAL DIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS OFFICES											Statistical Significance (90 percent)		
LABORATORY PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.			
APG#	417	TISSUE TYPING											
CPT CODE	86074	Blood crossmatch antiglobulin test	17	0	\$13.04	N.A.	\$13.13	N.A.	\$11.81	N.A.			N.A.
APG#	419	SIMPLE IMMUNOLOGY TESTS											N.A.
CPT CODE	86422	Radioallergosorbent test, in vitro	5	0	\$5.19	N.A.	\$1.48	N.A.	\$6.07	N.A.			✓
CPT CODE	86430	Rheumatoid factor, qualitative	19	6	\$6.39	\$24.13	\$6.26	\$4.84	\$5.70	\$49.73			✓
APG#	421	SIMPLE MICROBIOLOGY TESTS											✓
CPT CODE	87070	Culture, bacterial, definitive; any of	15	3	\$50.17	\$24.94	\$23.58	\$21.09	\$113.05	\$20.68			✓
CPT CODE	87086	Culture, bacterial, urine; quantitative	13	4	\$6.69	\$8.67	\$5.28	\$8.70	\$6.25	\$2.05			✓
CPT CODE	87088	Culture, bacterial, urine identification	10	3	\$19.62	\$38.70	\$20.82	\$32.53	\$12.95	\$35.72			✓
CPT CODE	87101	Culture, fungi, isolation (with or without)	12	2	\$24.03	\$52.56	\$17.67	\$52.56	\$24.82	\$8.40	✓		✓
CPT CODE	87184	Sensitivity studies, antibiotic; disk	9	3	\$6.08	\$9.27	\$5.56	\$10.05	\$4.76	\$1.95			✓
CPT CODE	87205	Smear, primary source, with interpretation	14	4	\$7.68	\$5.82	\$6.57	\$5.02	\$8.53	\$2.51			✓
CPT CODE	87210	Smear, primary source without interpretation	20	4	\$4.79	\$14.47	\$2.91	\$17.03	\$5.06	\$7.49	✓		
APG#	422	COMPLEX MICROBIOLOGY TESTS											✓
CPT CODE	87040	Culture, bacterial, definitive; blood	18	3	\$13.24	\$19.50	\$9.91	\$24.55	\$13.65	\$11.93			✓
CPT CODE	87045	Culture, bacterial, definitive; stool	14	3	\$17.07	\$32.61	\$19.62	\$30.33	\$14.12	\$14.22			✓
CPT CODE	87177	Ova and parasites, direct smears, 10- to 20-µm	14	2	\$13.32	\$42.85	\$11.00	\$42.85	\$11.19	\$7.81	✓		
APG#	423	SIMPLE ENDOCRINOLOGY TESTS											✓
CPT CODE	84435	Thyroxine, binding globulin (TBG)	11	3	\$17.20	\$48.08	\$9.97	\$1.01	\$26.46	\$82.34			N.A.
CPT CODE	84442	Thyroxine, (t-4), cpb or resin uptake	5	0	\$3.57	N.A.	\$1.48	N.A.	\$4.09	N.A.			
APG#	425	BASIC CHEMISTRY TESTS											✓
CPT CODE	82947	Glucose except urine (eg, blood, s	21	7	\$7.47	\$7.02	\$4.08	\$1.30	\$8.57	\$11.26			✓
CPT CODE	84132	Potassium; blood	22	5	\$6.17	\$11.47	\$3.70	\$1.30	\$6.60	\$16.28			✓
CPT CODE	84478	Triglycerides, blood	21	6	\$7.25	\$6.20	\$4.08	\$3.41	\$7.38	\$7.23			✓
APG#	426	SIMPLE CHEMISTRY TESTS											✓
CPT CODE	82270	Blood occult; feces screening	19	6	\$3.65	\$2.19	\$3.29	\$1.64	\$3.36	\$2.10			✓
CPT CODE	84479	Triiodothyronine (T-3); resin uptake	15	3	\$9.25	\$45.75	\$8.35	\$1.03	\$11.45	\$78.30			✓
CPT CODE	94700	Analysis of arterial blood gas (oxygen, pH, pO2)	14	2	\$15.04	\$10.29	\$14.84	\$10.29	\$9.20	\$0.70			✓
APG#	427	COMPLEX CHEMISTRY TESTS											✓
CPT CODE	83036	Hemoglobin; glycated	10	2	\$7.85	\$0.69	\$7.45	\$0.69	\$6.50	\$0.87			✓
CPT CODE	83718	Lipoprotein, direct measurement; total	17	5	\$7.68	\$7.83	\$2.59	\$5.53	\$9.33	\$8.62			✓
CPT CODE	83720	Lipoprotein, direct measurement; total	10	2	\$17.64	\$9.56	\$19.12	\$9.56	\$14.03	\$12.72			✓
APG#	428	MULTICHANNEL CHEMISTRY TESTS											✓
CPT CODE	80016	Automated multichannel test; 13-channel	17	5	\$7.97	\$9.34	\$2.00	\$0.78	\$10.68	\$12.78			✓
CPT CODE	80019	Automated multichannel test; 19-channel	16	4	\$26.11	\$8.13	\$10.07	\$1.03	\$59.14	\$14.84			✓
APG#	429	SIMPLE TOXICOLOGY TESTS											✓
CPT CODE	82662	Immunoassay technique for drugs	13	1	\$13.76	\$0.73	\$7.52	N.A.	\$25.53	N.A.			✓
APG#	431	URINALYSIS											✓
CPT CODE	81000	Urinalysis routine (pH, specific gravity, color, etc.)	23	5	\$6.90	\$9.34	\$1.48	\$8.71	\$8.18	\$10.52			✓
CPT CODE	81002	Urinalysis routine, without microscopic examination	16	4	\$4.04	\$4.79	\$1.51	\$4.71	\$5.04	\$4.11			✓
APG#	432	THERAPEUTIC DRUG MONITORING											✓
CPT CODE	84045	Phenytoin	20	3	\$11.30	\$14.12	\$7.32	\$1.37	\$21.17	\$22.12			✓

TOTAL DIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES											Statistical Significance (90 percent)		
LABORATORY PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference	
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.				
CPT CODE	84420	Theophylline, blood or saliva	21	4	\$5.79	\$56.04	\$4.42	\$18.35	\$5.08	\$89.03			
APG#	433	RADIOIMMUNOASSAY TESTS									✓		
CPT CODE	82643	Digoxin	10	1	\$12.63	\$33.20	\$11.72	N.A.	\$7.74	N.A.	✓		
CPT CODE	84436	Thyroxine, total	8	1	\$6.86	\$82.30	\$7.41	N.A.	\$5.06	N.A.		✓	
CPT CODE	84443	Thyroid stimulating hormone (TSH)	20	4	\$6.80	\$69.33	\$5.05	\$12.35	\$8.52	\$121.87		✓	
CPT CODE	86151	Carcinoembryonic antigen (CEA)	16	2	\$15.97	\$25.42	\$6.93	\$25.42	\$28.08	\$31.51		✓	
APG#	434	SIMPLE CLOTTING TESTS										✓	
CPT CODE	85610	Prothrombin time	23	5	\$15.08	\$31.90	\$4.08	\$8.30	\$40.64	\$49.40		✓	
CPT CODE	85730	Thromboplastin time, partial (PTT)	23	4	\$16.44	\$36.41	\$4.08	\$10.50	\$41.06	\$59.40		✓	
APG#	436	SIMPLE HEMATOLOGY TESTS										✓	
CPT CODE	85022	Blood count, hemogram, automatic	20	6	\$13.32	\$16.11	\$13.97	\$3.26	\$11.40	\$28.55		✓	
CPT CODE	85031	Blood count, hemogram, manual	10	2	\$16.53	\$38.60	\$3.83	\$38.60	\$22.20	\$40.72		✓	
APG#	439	LITHIUM LEVEL MONITORING										✓	
CPT CODE	83725	Lithium, blood, quantitative	16	1	\$6.62	\$1.32	\$6.48	N.A.	\$7.68	N.A.		✓	
APG#	440	BLOOD AND URINE DIPSTICK TESTS										✓	
CPT CODE	82948	Glucose, blood, reagent strip	8	2	\$5.92	\$2.45	\$6.52	\$2.45	\$2.92	\$0.22		✓	
AGGREGATE MEAN FOR ALL LABORATORY PROCEDURES			640	133	\$11.47	\$20.20	\$6.20	\$6.26	\$25.86	\$37.63		✓	

TOTAL INDIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

LABORATORY PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
APG#	417	TISSUE TYPING										
CPT CODE	86074	Blood crossmatch antiglobulin test	5	0	\$38.23	N.A.	\$43.80	N.A.	\$19.53	N.A.		N.A.
APG#	419	SIMPLE IMMUNOLOGY TESTS										
CPT CODE	86422	Radioallergosorbent test, in vitro	1	0	\$16.40	N.A.	N.A.	N.A.	N.A.	N.A.		N.A.
CPT CODE	86430	Rheumatoid factor, qualitative	6	2	\$22.58	\$25.33	\$11.43	\$25.33	\$20.83	\$2.44		✓
APG#	421	SIMPLE MICROBIOLOGY TESTS										
CPT CODE	87070	Culture, bacterial, definitive; any of	6	2	\$68.66	\$94.96	\$54.02	\$94.96	\$44.39	\$9.13		✓
CPT CODE	87086	Culture, bacterial, urine; quantitative	5	2	\$23.68	\$31.65	\$14.60	\$31.65	\$24.15	\$3.05		✓
CPT CODE	87088	Culture, bacterial, urine identification	4	2	\$38.63	\$79.14	\$30.24	\$79.14	\$26.35	\$7.59		✓
CPT CODE	87101	Culture, fungi, isolation (with or without)	5	2	\$96.48	\$189.93	\$98.43	\$189.93	\$52.55	\$18.24		✓
CPT CODE	87184	Sensitivity studies, antibiotic; disk	4	2	\$9.19	\$31.65	\$8.97	\$31.65	\$4.63	\$3.05	✓	
CPT CODE	87205	Smear, primary source, with interpretation	5	2	\$24.61	\$28.49	\$14.77	\$28.49	\$20.97	\$2.73		✓
CPT CODE	87210	Smear, primary source w/interpretation	5	2	\$27.85	\$37.99	\$19.69	\$37.99	\$20.50	\$3.64		✓
APG#	422	COMPLEX MICROBIOLOGY TESTS										
CPT CODE	87040	Culture, bacterial, definitive; blood	6	2	\$61.55	\$61.16	\$54.02	\$61.16	\$52.33	\$38.68		✓
CPT CODE	87045	Culture, bacterial, definitive; stool	6	2	\$43.65	\$63.31	\$31.01	\$63.31	\$31.29	\$6.08		✓
CPT CODE	87177	Ova and parasites, direct smears	5	2	\$94.12	\$160.43	\$58.40	\$160.43	\$123.63	\$59.97		✓
APG#	423	SIMPLE ENDOCRINOLOGY TESTS										
CPT CODE	84435	Thyroxine, binding globulin (TBG)	5	1	\$7.62	\$5.90	\$8.20	N.A.	\$3.94	N.A.		✓
CPT CODE	84442	Thyroxine, (t-4), cpb or resin uptake	1	0	\$8.20	N.A.	N.A.	N.A.	N.A.	N.A.		N.A.
APG#	425	BASIC CHEMISTRY TESTS										
CPT CODE	82947	Glucose except urine (eg, blood, CSF)	6	2	\$13.15	\$6.33	\$7.93	\$6.33	\$11.70	\$0.61		✓
CPT CODE	84132	Potassium, blood	6	2	\$9.28	\$6.33	\$4.96	\$6.33	\$9.05	\$0.61		✓
CPT CODE	84478	Triglycerides, blood	6	2	\$17.09	\$6.33	\$7.10	\$6.33	\$24.54	\$0.61		✓
APG#	426	SIMPLE CHEMISTRY TESTS										
CPT CODE	82270	Blood occult, feces screening	5	3	\$9.61	\$8.09	\$4.92	\$8.86	\$8.63	\$2.52		✓
CPT CODE	84479	Tridothyronine (T-3); resin uptake	5	1	\$12.49	\$5.90	\$9.00	N.A.	\$11.96	N.A.		✓
CPT CODE	94700	Analysis of arterial blood gas (oxygen, pH, etc.)	11	2	\$40.53	\$29.79	\$11.86	\$29.79	\$79.62	\$2.02		✓
APG#	427	COMPLEX CHEMISTRY TESTS										
CPT CODE	83036	Hemoglobin, glycated	4	0	\$40.57	N.A.	\$10.57	N.A.	\$61.59	N.A.		N.A.
CPT CODE	83718	Lipoprotein, direct measurement; total	6	2	\$14.12	\$15.83	\$11.61	\$15.83	\$11.13	\$1.51		✓
CPT CODE	83720	Lipoprotein, direct measurement; HDL	5	1	\$33.74	\$16.90	\$10.1	N.A.	\$37.22	N.A.		✓
APG#	428	MULTICHANNEL CHEMISTRY TESTS										
CPT CODE	80016	Automated multichannel test; 13-15	5	2	\$24.81	\$31.65	\$16.40	\$31.65	\$25.40	\$3.05		✓
CPT CODE	80019	Automated multichannel test; 19 or more	6	1	\$24.99	\$33.81	\$17.94	N.A.	\$21.81	N.A.		✓
APG#	429	SIMPLE TOXICOLOGY TESTS										
CPT CODE	82662	Immunoassay technique for drugs	5	0	\$13.17	N.A.	\$9.85	N.A.	\$10.56	N.A.		N.A.
APG#	431	URINALYSIS										
CPT CODE	81000	Urinalysis routine (pH, specific gravity, etc.)	7	2	\$14.29	\$20.25	\$8.77	\$20.25	\$12.29	\$4.74		✓
CPT CODE	81002	Urinalysis routine, without microscopy	4	2	\$6.30	\$4.14	\$5.62	\$4.14	\$4.68	\$3.71		✓
APG#	432	THERAPEUTIC DRUG MONITORING										
CPT CODE	84045	Phenytoin	6	2	\$12.81	\$11.40	\$10.11	\$11.40	\$10.81	\$7.78		✓

TOTAL INDIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES												
LABORATORY PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
CPT CODE	84420 Theophylline, blood or saliva	6	2	\$11.88	\$6.33	\$8.51	\$6.33	\$11.54	\$0.61			✓
APG#	433 RADIOIMMUNOASSAY TESTS											
CPT CODE	82643 Digoxin	6	1	\$19.09	\$16.90	\$9.79	N.A.	\$23.70	N.A.			✓
CPT CODE	84436 Thyroxine; total	4	2	\$14.45	\$205.78	\$8.97	\$205.78	\$12.58	\$282.67			✓
CPT CODE	84443 Thyroid stimulating hormone (TSH)	6	2	\$12.57	\$53.66	\$10.61	\$53.66	\$10.74	\$67.54			✓
CPT CODE	86151 Carcinoembryonic antigen (CEA)	6	1	\$19.77	\$202.83	\$18.11	N.A.	\$11.37	N.A.		✓	
APG#	434 SIMPLE CLOTTING TESTS											
CPT CODE	85610 Prothrombin time	6	2	\$17.69	\$21.94	\$10.46	\$21.94	\$18.94	\$2.35			✓
CPT CODE	85730 Thromboplastin time, partial (PTT)	6	2	\$25.13	\$48.55	\$21.74	\$48.55	\$23.21	\$26.95			✓
APG#	436 SIMPLE HEMATOLOGY TESTS											
CPT CODE	85022 Blood count; hemogram, automatic	6	2	\$30.51	\$31.65	\$18.03	\$31.65	\$37.61	\$3.05			✓
CPT CODE	85031 Blood count; hemogram, manual	2	2	\$19.00	\$28.71	\$19.00	\$28.71	\$1.34	\$7.22			✓
APG#	439 LITHIUM LEVEL MONITORING											
CPT CODE	83725 Lithium, blood, quantitative	5	0	\$15.75	N.A.	\$9.73	N.A.	\$17.41	N.A.			N.A.
APG#	440 BLOOD AND URINE DIPSTICK TESTS											
CPT CODE	82948 Glucose; blood, reagent strip	4	0	\$7.07	N.A.	\$4.74	N.A.	\$5.32	N.A.			N.A.
AGGREGATE MEAN FOR ALL LABORATORY PROCEDURES		215	63	\$26.88	\$47.17	\$14.60	\$28.36	\$38.49	\$67.07		✓	

TOTAL DIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

LABORATORY PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher	Higher	No
										Hospital	Phys. Off.	Significant
APG#	417 TISSUE TYPING											
CPT CODE	86074 Blood crossmatch antiglobulin test	17	0	\$13.04	N.A.	\$13.13	N.A.	\$11.81	N.A.			N.A.
APG#	419 SIMPLE IMMUNOLOGY TESTS											
CPT CODE	86422 Radioallergosorbent test, in vitro	5	0	\$5.19	N.A.	\$1.48	N.A.	\$6.07	N.A.			N.A.
CPT CODE	86430 Rheumatoid factor, qualitative	19	6	\$6.39	\$24.13	\$6.26	\$4.84	\$5.70	\$49.73			✓
APG#	421 SIMPLE MICROBIOLOGY TESTS											
CPT CODE	87070 Culture, bacterial, definitive; any of	15	3	\$50.17	\$24.94	\$23.58	\$21.09	\$113.05	\$20.68			✓
CPT CODE	87086 Culture, bacterial, urine; quantitative	13	4	\$6.69	\$8.67	\$5.28	\$8.70	\$6.25	\$2.05			✓
CPT CODE	87088 Culture, bacterial, urine identification	10	3	\$19.62	\$38.70	\$20.82	\$32.53	\$12.95	\$35.72			✓
CPT CODE	87101 Culture, fungi, isolation (with or without	12	2	\$24.03	\$52.56	\$17.67	\$52.56	\$24.82	\$8.40			✓
CPT CODE	87184 Sensitivity studies, antibiotic; disk	9	3	\$6.08	\$9.27	\$5.56	\$10.05	\$4.76	\$1.95			✓
CPT CODE	87205 Smear, primary source, with interpretation	14	4	\$7.68	\$5.82	\$6.57	\$5.02	\$8.53	\$2.51			✓
CPT CODE	87210 Smear, primary source w/interpretation	20	4	\$4.79	\$14.47	\$2.91	\$17.03	\$5.06	\$7.49			✓
APG#	422 COMPLEX MICROBIOLOGY TESTS											
CPT CODE	87040 Culture, bacterial, definitive; blood	18	3	\$13.24	\$19.50	\$9.91	\$24.55	\$13.65	\$11.93			✓
CPT CODE	87045 Culture, bacterial, definitive; stool	14	3	\$17.07	\$32.61	\$19.62	\$30.33	\$14.12	\$14.22			✓
CPT CODE	87177 Ova and parasites, direct smears	14	2	\$13.32	\$42.85	\$11.00	\$42.85	\$11.19	\$7.81			✓
APG#	423 SIMPLE ENDOCRINOLOGY TESTS											
CPT CODE	84435 Thyroxine, binding globulin (TBG)	11	3	\$17.20	\$48.08	\$9.97	\$1.01	\$26.46	\$82.34			✓
CPT CODE	84442 Thyroxine, (t-4), cpb or resin uptake	5	0	\$3.57	N.A.	\$1.48	N.A.	\$4.09	N.A.			N.A.
APG#	425 BASIC CHEMISTRY TESTS											
CPT CODE	82947 Glucose except urine (eg, blood, CSF)	21	7	\$7.47	\$7.02	\$4.08	\$1.30	\$8.57	\$11.26			✓
CPT CODE	84132 Potassium; blood	22	5	\$6.17	\$11.47	\$3.70	\$1.30	\$6.60	\$16.28			✓
CPT CODE	84478 Triglycerides, blood	21	6	\$7.25	\$6.20	\$4.08	\$3.41	\$7.38	\$7.23			✓
APG#	426 SIMPLE CHEMISTRY TESTS											
CPT CODE	82270 Blood occult, feces screening	19	6	\$3.65	\$2.19	\$3.29	\$1.64	\$3.36	\$2.10			✓
CPT CODE	84479 Tridethyrylone (T-3); resin uptake	15	3	\$9.25	\$45.75	\$8.35	\$1.03	\$11.45	\$78.30			✓
CPT CODE	94700 Analysis of arterial blood gas (oxygen	14	2	\$15.04	\$10.29	\$14.84	\$10.29	\$9.20	\$0.70			✓
APG#	427 COMPLEX CHEMISTRY TESTS											
CPT CODE	83036 Hemoglobin, glycated	10	2	\$7.85	\$0.69	\$7.45	\$0.69	\$6.50	\$0.87			✓
CPT CODE	83718 Lipoprotein, direct measurement; total	17	5	\$7.68	\$7.83	\$2.59	\$5.53	\$9.33	\$8.62			✓
CPT CODE	83720 Lipoprotein, direct measurement; HDL	10	2	\$17.64	\$9.56	\$19.12	\$9.56	\$14.03	\$12.72			✓
APG#	428 MULTICHANNEL CHEMISTRY TESTS											
CPT CODE	80016 Automated multichannel test; 13-17	17	5	\$7.97	\$9.34	\$2.00	\$0.78	\$10.68	\$12.78			✓
CPT CODE	80019 Automated multichannel test; 19-23	16	4	\$26.11	\$8.13	\$10.07	\$1.03	\$59.14	\$14.84			✓
APG#	429 SIMPLE TOXICOLOGY TESTS											
CPT CODE	82662 Immunoassay technique for drugs	13	1	\$13.76	\$0.73	\$7.52	N.A.	\$25.53	N.A.			✓
APG#	431 URINALYSIS											
CPT CODE	81000 Urinalysis routine (pH, specific gravity	23	5	\$6.90	\$9.34	\$1.48	\$8.71	\$8.18	\$10.52			✓
CPT CODE	81002 Urinalysis routine, without microscopy	16	4	\$4.04	\$4.79	\$1.51	\$4.71	\$5.04	\$4.11			✓
APG#	432 THERAPEUTIC DRUG MONITORING											
CPT CODE	84045 Phenytoin	20	3	\$11.30	\$14.12	\$7.32	\$1.37	\$21.17	\$22.12			✓

TOTAL DIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

LABORATORY PROCEDURES	APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
CPT CODE	84420 Theophylline, blood or saliva	21	4	\$5.79	\$56.04	\$4.42	\$18.35	\$5.08	\$89.03			✓
APG#	433 RADIOIMMUNOASSAY TESTS											
CPT CODE	82643 Digoxin	10	1	\$12.63	\$33.20	\$11.72	N.A.	\$7.74	N.A.		✓	
CPT CODE	84436 Thyroxine, total	8	1	\$6.86	\$82.30	\$7.41	N.A.	\$5.06	N.A.		✓	
CPT CODE	84443 Thyroid stimulating hormone (TSH)	20	4	\$6.80	\$69.33	\$5.05	\$12.35	\$8.52	\$121.87			✓
CPT CODE	86151 Carcinoembryonic antigen (CEA)	16	2	\$15.97	\$25.42	\$6.93	\$25.42	\$28.08	\$31.51			✓
APG#	434 SIMPLE CLOTTING TESTS											
CPT CODE	85610 Prothrombin time	23	5	\$15.08	\$31.90	\$4.08	\$8.30	\$40.64	\$49.40			✓
CPT CODE	85730 Thromboplastin time, partial (PTT)	23	4	\$16.44	\$36.41	\$4.08	\$10.50	\$41.06	\$59.40			✓
APG#	436 SIMPLE HEMATOLOGY TESTS											
CPT CODE	85022 Blood count; hemogram, automatic	20	6	\$13.32	\$16.11	\$13.97	\$3.26	\$11.40	\$28.55			✓
CPT CODE	85031 Blood count; hemogram, manual	10	2	\$16.53	\$38.60	\$3.83	\$38.60	\$22.20	\$40.72			✓
APG#	439 LITHIUM LEVEL MONITORING											
CPT CODE	83725 Lithium, blood, quantitative	16	1	\$6.62	\$1.32	\$6.48	N.A.	\$7.68	N.A.			✓
APG#	440 BLOOD AND URINE DIPSTICK TESTS											
CPT CODE	82948 Glucose; blood, reagent strip	8	2	\$5.92	\$2.45	\$6.52	\$2.45	\$2.92	\$0.22			✓
											✓	
AGGREGATE MEAN FOR ALL LABORATORY PROCEDURES		640	133	\$11.47	\$20.20	\$6.20	\$6.26	\$25.86	\$37.63			

TOTAL INDIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES												
		Sample Size	Mean		Median		Standard Deviation		Statistical Significance (90 percent)			
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off Mean
LABORATORY PROCEDURES	APG & CPT DESCRIPTION											
APG#	417	TISSUE TYPING										
CPT CODE	86074	Blood crossmatch antiglobulin test	5	0	\$38.23	N.A.	\$43.80	N.A.	\$19.53	N.A.		N.A.
APG#	419	SIMPLE IMMUNOLOGY TESTS										
CPT CODE	86422	Radioallergosorbent test, in vitro test	1	0	\$16.40	N.A.	N.A.	N.A.	N.A.	N.A.		N.A.
CPT CODE	86430	Rheumatoid factor, qualitative	6	2	\$22.58	\$25.33	\$11.43	\$25.33	\$20.83	\$2.44		✓
APG#	421	SIMPLE MICROBIOLOGY TESTS										
CPT CODE	87070	Culture, bacterial, definitive, any organism	6	2	\$68.66	\$94.96	\$54.02	\$94.96	\$44.39	\$9.13		✓
CPT CODE	87086	Culture, bacterial, urine, quantitative	5	2	\$23.68	\$31.65	\$14.60	\$31.65	\$24.15	\$3.05		✓
CPT CODE	87088	Culture, bacterial, urine identification	4	2	\$38.63	\$79.14	\$30.24	\$79.14	\$26.35	\$7.59		✓
CPT CODE	87101	Culture, fungi, isolation (with or without subculture)	5	2	\$96.48	\$189.93	\$98.43	\$189.93	\$52.55	\$18.24		✓
CPT CODE	87184	Sensitivity studies, antibiotic; disk diffusion	4	2	\$9.19	\$31.65	\$8.97	\$31.65	\$4.63	\$3.05		✓
CPT CODE	87205	Smear, primary source, with interpretation	5	2	\$24.61	\$28.49	\$14.77	\$28.49	\$20.97	\$2.73		✓
CPT CODE	87210	Smear, primary source w/interpretation	5	2	\$27.85	\$37.99	\$19.69	\$37.99	\$20.50	\$3.64		✓
APG#	422	COMPLEX MICROBIOLOGY TESTS										
CPT CODE	87040	Culture, bacterial, definitive; blood	6	2	\$61.55	\$61.16	\$54.02	\$61.16	\$52.33	\$38.68		✓
CPT CODE	87045	Culture, bacterial, definitive; stool	6	2	\$43.65	\$63.31	\$31.01	\$63.31	\$31.29	\$6.08		✓
CPT CODE	87177	Ova and parasites, direct smears, feces	5	2	\$94.12	\$160.43	\$58.40	\$160.43	\$123.63	\$59.97		✓
APG#	423	SIMPLE ENDOCRINOLOGY TESTS										
CPT CODE	84435	Thyroxine, binding globulin (TBG)	5	1	\$7.62	\$5.90	\$8.20	N.A.	\$3.94	N.A.		✓
CPT CODE	84442	Thyroxine, (t-4), cpb or resin uptake	1	0	\$8.20	N.A.	N.A.	N.A.	N.A.	N.A.		N.A.
APG#	425	BASIC CHEMISTRY TESTS										
CPT CODE	82947	Glucose except urine (eg, blood, serum)	6	2	\$13.15	\$6.33	\$7.93	\$6.33	\$11.70	\$0.61		✓
CPT CODE	84132	Potassium; blood	6	2	\$8.28	\$6.33	\$4.96	\$6.33	\$9.05	\$0.61		✓
CPT CODE	84478	Triglycerides, blood	6	2	\$17.09	\$6.33	\$7.10	\$6.33	\$24.54	\$0.61		✓
APG#	426	SIMPLE CHEMISTRY TESTS										
CPT CODE	82270	Blood occult, feces screening	5	3	\$9.61	\$8.09	\$4.92	\$8.86	\$8.63	\$2.52		✓
CPT CODE	84479	Triiodothyronine (T-3); resin uptake	5	1	\$12.49	\$5.90	\$9.00	N.A.	\$11.96	N.A.		✓
CPT CODE	94700	Analysis of arterial blood gas (oxygen, pH, temperature)	11	2	\$40.53	\$29.79	\$11.86	\$29.79	\$79.62	\$2.02		✓
APG#	427	COMPLEX CHEMISTRY TESTS										
CPT CODE	83036	Hemoglobin; glycoated	4	0	\$40.57	N.A.	\$10.57	N.A.	\$61.59	N.A.		N.A.
CPT CODE	83718	Lipoprotein, direct measurement; HDL	6	2	\$14.12	\$15.83	\$11.61	\$15.83	\$11.13	\$1.51		✓
CPT CODE	83720	Lipoprotein, direct measurement; LDL	5	1	\$33.74	\$16.90	\$11.01	N.A.	\$37.22	N.A.		✓
APG#	428	MULTICHANNEL CHEMISTRY TESTS										
CPT CODE	80016	Automated multichannel test; 13-item	5	2	\$24.81	\$31.65	\$16.40	\$31.65	\$25.40	\$3.05		✓
CPT CODE	80019	Automated multichannel test; 19-item	6	1	\$24.99	\$33.81	\$17.94	N.A.	\$21.81	N.A.		✓
APG#	429	SIMPLE TOXICOLOGY TESTS										
CPT CODE	82662	Immunoassay technique for drugs	5	0	\$13.17	N.A.	\$9.85	N.A.	\$10.56	N.A.		N.A.
APG#	431	URINALYSIS										
CPT CODE	81000	Urinalysis routine (pH, specific gravity, color, odor)	7	2	\$14.29	\$20.25	\$8.77	\$20.25	\$12.29	\$4.74		✓
CPT CODE	81002	Urinalysis routine, without microscopic examination	4	2	\$6.30	\$4.14	\$5.62	\$4.14	\$4.68	\$3.71		✓
APG#	432	THERAPEUTIC DRUG MONITORING										
CPT CODE	84045	Phenytoin	6	2	\$12.81	\$11.40	\$10.11	\$11.40	\$10.81	\$7.78		✓

TOTAL INDIRECT RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES													
LABORATORY PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off Mean	No Significant Difference
CPT CODE	84420	Theophylline, blood or saliva	6	2	\$11.88	\$6.33	\$8.51	\$6.33	\$11.54	\$0.61			✓
APG#	433	RADIOIMMUNOASSAY TESTS											
CPT CODE	82643	Digoxin	6	1	\$19.09	\$16.90	\$9.79	N.A.	\$23.70	N.A.			✓
CPT CODE	84436	Thyroxine; total	4	2	\$14.45	\$205.78	\$8.97	\$205.78	\$12.58	\$282.67			✓
CPT CODE	84443	Thyroid stimulating hormone (TSH)	6	2	\$12.57	\$53.66	\$10.61	\$53.66	\$10.74	\$67.54			✓
CPT CODE	86151	Carcinoembryonic antigen (CEA)	6	1	\$19.77	\$202.83	\$18.11	N.A.	\$11.37	N.A.		✓	
APG#	434	SIMPLE CLOTTING TESTS											
CPT CODE	85610	Prothrombin time	6	2	\$17.69	\$21.94	\$10.46	\$21.94	\$18.94	\$2.35			✓
CPT CODE	85730	Thromboplastin time, partial (PTT)	6	2	\$25.13	\$48.55	\$21.74	\$48.55	\$23.21	\$26.95			✓
APG#	436	SIMPLE HEMATOLOGY TESTS											
CPT CODE	85022	Blood count; hemogram, automatic	6	2	\$30.51	\$31.65	\$18.03	\$31.65	\$37.61	\$3.05			✓
CPT CODE	85031	Blood count; hemogram, manual	2	2	\$19.00	\$28.71	\$19.00	\$28.71	\$1.34	\$7.22			✓
APG#	439	LITHIUM LEVEL MONITORING											
CPT CODE	83725	Lithium, blood, quantitative	5	0	\$15.75	N.A.	\$9.73	N.A.	\$17.41	N.A.			N.A.
APG#	440	BLOOD AND URINE DIPSTICK TESTS											
CPT CODE	82948	Glucose; blood, reagent strip	4	0	\$7.07	N.A.	\$4.74	N.A.	\$5.32	N.A.			N.A.
AGGREGATE MEAN FOR ALL LABORATORY PROCEDURES			215	63	\$26.88	\$47.17	\$14.60	\$28.36	\$38.49	\$67.07		✓	

TOTAL RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES

LABORATORY PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
APG#	417	TISSUE TYPING											
CPT CODE	86074	Blood crossmatch antiglobulin test	17	0	\$24.28	N.A.	\$14.56	N.A.	\$30.08	N.A.			N.A.
APG#	419	SIMPLE IMMUNOLOGY TESTS											
CPT CODE	86422	Radioallergosorbent test, in vitro	5	0	\$8.47	N.A.	\$1.48	N.A.	\$12.62	N.A.			N.A.
CPT CODE	86430	Rheumatoid factor, qualitative	19	6	\$13.52	\$32.57	\$7.58	\$4.84	\$18.79	\$58.64			✓
APG#	421	SIMPLE MICROBIOLOGY TESTS											
CPT CODE	87070	Culture, bacterial, definitive; any organism	15	3	\$77.63	\$88.25	\$51.51	\$109.60	\$115.52	\$73.48			✓
CPT CODE	87086	Culture, bacterial, urine, quantitative	13	4	\$15.80	\$24.49	\$12.30	\$23.45	\$20.16	\$20.36			✓
CPT CODE	87088	Culture, bacterial, urine identification	10	3	\$35.07	\$91.46	\$27.79	\$106.30	\$32.97	\$78.63			✓
CPT CODE	87101	Culture, fungi, isolation (with or without subculture)	12	2	\$64.23	\$242.49	\$17.67	\$242.49	\$80.70	\$9.84			✓
CPT CODE	87184	Sensitivity studies, antibiotic; disk	9	3	\$10.16	\$30.38	\$8.52	\$36.56	\$7.12	\$17.42			✓
CPT CODE	87205	Smear, primary source, with interpretation	14	4	\$16.47	\$20.06	\$8.29	\$20.23	\$21.50	\$18.31			✓
CPT CODE	87210	Smear, primary source w/interpretation	20	4	\$11.75	\$33.46	\$4.25	\$35.13	\$18.24	\$26.05			✓
APG#	422	COMPLEX MICROBIOLOGY TESTS											
CPT CODE	87040	Culture, bacterial, definitive; blood	18	3	\$33.76	\$60.27	\$9.91	\$58.36	\$51.20	\$55.38			✓
CPT CODE	87045	Culture, bacterial, definitive; stool	14	3	\$35.78	\$74.82	\$26.85	\$89.34	\$36.59	\$49.51			✓
CPT CODE	87177	Ova and parasites, direct smears	14	2	\$46.93	\$203.27	\$17.67	\$203.27	\$85.14	\$67.78			✓
APG#	423	SIMPLE ENDOCRINOLOGY TESTS											
CPT CODE	84435	Thyroxine, binding globulin (TBG)	11	3	\$20.66	\$50.05	\$11.49	\$1.01	\$26.69	\$85.75			✓
CPT CODE	84442	Thyroxine, (t-4), cpb or resin uptake	5	0	\$5.21	N.A.	\$1.48	N.A.	\$6.22	N.A.			N.A.
APG#	425	BASIC CHEMISTRY TESTS											
CPT CODE	82947	Glucose except urine (eg, blood, CSF)	21	7	\$11.23	\$8.83	\$4.08	\$1.30	\$16.12	\$14.08			✓
CPT CODE	84132	Potassium; blood	22	5	\$8.43	\$14.00	\$3.70	\$1.30	\$11.16	\$19.38			✓
CPT CODE	84478	Triglycerides, blood	21	6	\$12.13	\$8.31	\$4.08	\$3.41	\$19.54	\$10.40			✓
APG#	426	SIMPLE CHEMISTRY TESTS											
CPT CODE	82270	Blood occult; feces screening	19	6	\$6.18	\$5.35	\$3.55	\$2.30	\$7.57	\$6.31			✓
CPT CODE	84479	Tridethyrynone (T-3); resin uptake	15	3	\$13.41	\$47.72	\$8.35	\$1.03	\$15.33	\$81.70			✓
CPT CODE	94700	Analysis of arterial blood gas (oxygen, pH, PCO2, PO2)	14	2	\$46.88	\$40.08	\$25.44	\$40.08	\$76.77	\$1.32			✓
APG#	427	COMPLEX CHEMISTRY TESTS											
CPT CODE	83036	Hemoglobin, glycated	10	2	\$24.07	\$0.69	\$12.65	\$0.69	\$43.05	\$0.87			✓
CPT CODE	83718	Lipoprotein, direct measurement; cholesterol	17	5	\$12.66	\$14.16	\$2.59	\$5.53	\$17.46	\$17.02			✓
CPT CODE	83720	Lipoprotein, direct measurement; triglyceride	10	2	\$34.51	\$18.01	\$29.48	\$18.01	\$35.96	\$24.67			✓
APG#	428	MULTICHANNEL CHEMISTRY TESTS											
CPT CODE	80016	Automated multichannel test: 13-17	17	5	\$15.26	\$22.00	\$2.00	\$0.78	\$25.63	\$30.02			✓
CPT CODE	80019	Automated multichannel test: 19-24	16	4	\$35.48	\$16.58	\$13.87	\$1.03	\$61.04	\$31.74			✓
APG#	429	SIMPLE TOXICOLOGY TESTS											
CPT CODE	82662	Immunoassay technique for drugs	13	1	\$18.82	\$0.73	\$7.52	N.A.	\$27.11	N.A.			✓
APG#	431	URINALYSIS											
CPT CODE	81000	Urinalysis routine (pH, specific gravity, color, etc.)	23	5	\$11.25	\$17.44	\$11.25	\$8.71	\$14.14	\$20.12			✓
CPT CODE	81002	Urinalysis routine, without microscopic examination	16	4	\$5.62	\$6.86	\$5.62	\$5.47	\$6.94	\$7.11			✓
APG#	432	THERAPEUTIC DRUG MONITORING											
CPT CODE	84045	Phenylethylamine	20	3	\$15.14	\$21.72	\$7.32	\$7.27	\$23.01	\$30.32			✓

TOTAL RESOURCE COSTS FOR LABORATORY PROCEDURES, HOSPITALS AND PHYSICIANS' OFFICES											Statistical Significance (90 percent)		
LABORATORY PROCEDURES		APG & CPT DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital	Higher Phys. Off.	No Significant Difference
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital Mean	Phys. Off. Mean	
CPT CODE	84420	Theophylline, blood or saliva	21	4	\$9.18	\$59.21	\$4.42	\$21.73	\$11.27	\$91.44			✓
APG#	433	RADIOIMMUNOASSAY TESTS											
CPT CODE	82643	Digoxin	10	1	\$24.09	\$50.10	\$21.44	N.A.	\$25.37	N.A.			✓
CPT CODE	84436	Thyroxine, total	8	2	\$14.09	\$246.93	\$11.51	\$246.93	\$14.33	\$340.87			✓
CPT CODE	84443	Thyroid stimulating hormone (TSH)	20	4	\$10.57	\$96.16	\$5.05	\$63.06	\$12.38	\$121.66			✓
CPT CODE	86151	Carcinoembryonic antigen (CEA)	16	2	\$23.38	\$126.83	\$13.13	\$126.83	\$29.87	\$174.93			✓
APG#	434	SIMPLE CLOTTING TESTS											
CPT CODE	85610	Prothrombin time	23	5	\$19.69	\$40.67	\$4.08	\$8.30	\$41.83	\$58.76			✓
CPT CODE	85730	Thromboplastin time, partial (PTT)	23	4	\$23.00	\$60.68	\$4.08	\$25.25	\$43.22	\$90.51			✓
APG#	436	SIMPLE HEMATOLOGY TESTS											
CPT CODE	85022	Blood count; hemogram, automatic	20	6	\$22.47	\$26.67	\$15.17	\$3.26	\$30.00	\$43.13			✓
CPT CODE	85031	Blood count; hemogram, manual	10	2	\$20.33	\$67.30	\$3.83	\$67.30	\$23.93	\$47.93			✓
APG#	439	LITHIUM LEVEL MONITORING											
CPT CODE	83725	Lithium, blood, quantitative	16	1	\$11.54	\$1.32	\$6.58	N.A.	\$14.57	N.A.			✓
APG#	440	BLOOD AND URINE DIPSTICK TESTS											
CPT CODE	82948	Glucose; blood, reagent strip	8	2	\$9.45	\$2.45	\$10.36	\$2.45	\$6.08	\$0.22			✓
AGGREGATE MEAN FOR ALL LABORATORY PROCEDURES			638	135	\$20.55	\$41.92	\$7.56	\$7.27	\$38.93	\$72.26		✓	

TOTAL DIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES												
MEDICAL DIAGNOSES	APG#	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)	
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean No Significant Difference
APG#	601	HEMATOLOGICAL MALIGNANCY										
ICD9 CODE	204.0	Acute lymphoid leukemia	4	5	\$28.24	\$29.67	\$26.78	\$13.23	\$17.75	\$44.12		✓
APG#	602	PROSTATIC MALIGNANCY										
ICD9 CODE	185	Malignant neoplasm prostate	6	8	\$20.31	\$12.07	\$14.10	\$11.01	\$23.35	\$9.45		✓
APG#	603	LUNG MALIGNANCY										
ICD9 CODE	162.9	Malignant neoplasm of bronchus and lung	7	7	\$18.02	\$7.12	\$11.06	\$4.39	\$14.21	\$5.60	✓	
APG#	604	SKIN MALIGNANCY										
ICD9 CODE	173.9	Other malignant neoplasm of skin, site unspecified	5	6	\$16.81	\$12.37	\$15.18	\$12.51	\$12.44	\$9.27		✓
APG#	605	MALIGNANCIES EXCEPT HEMATOLOGICAL, PROSTATIC, LUNG & SKIN										
ICD9 CODE	174.9	Malignant neoplasm of female breast, unspecified	7	7	\$16.70	\$9.13	\$8.34	\$2.78	\$16.16	\$11.47		✓
APG#	616	POISONING										
ICD9 CODE	989.5	Toxic effect of other substances, venom and insect bites	5	3	\$34.96	\$35.71	\$28.92	\$43.98	\$28.14	\$25.63		✓
APG#	632	BURNS, & SKIN & SOFT TISSUE INJURY										
ICD9 CODE	883.0	Open wound of finger(s) without mention of foreign body	9	8	\$18.30	\$9.66	\$24.31	\$11.22	\$13.32	\$4.94	✓	
ICD9 CODE	V58.3	Attention to surgical dressings and sutures	15	7	\$13.62	\$7.53	\$12.58	\$6.60	\$6.17	\$4.04	✓	
APG#	633	FRACTURE, DISLOCATION & SPRAIN										
ICD9 CODE	820.8	Fracture of neck of femur unspecified, closed	6	8	\$33.96	\$12.95	\$29.36	\$7.29	\$29.99	\$15.42		✓
APG#	648											
ICD9 CODE	290.0	Senile and presenile organic psychotic disorders	7	5	\$23.41	\$4.63	\$18.31	\$4.89	\$16.51	\$1.85	✓	
APG#	649											
ICD9 CODE	300.0	Neurotic disorders, anxiety states	7	7	\$20.05	\$4.95	\$18.86	\$4.39	\$14.10	\$1.74	✓	
APG#	661											
ICD9 CODE	305.90	Nondependent abuse of drugs, other, misadventure	7	2	\$58.42	\$7.19	\$35.21	\$7.19	\$57.75	\$0.57	✓	
APG#	662											
ICD9 CODE	303.90	Alcohol dependence syndrome, other and unspecified	5	5	\$21.92	\$5.94	\$19.92	\$6.78	\$13.42	\$4.03	✓	
APG#	691	ROUTINE PRENATAL CARE										
ICD9 CODE	V22.1	Supervision of other normal pregnancy	4	6	\$12.39	\$6.60	\$12.28	\$5.46	\$10.18	\$3.87		✓
APG#	692	MATERNAL ANTEPARTUM COMPLICATION										
ICD9 CODE	644.13	Early or threatened labor, threatened preterm labor	5	4	\$42.82	\$10.74	\$36.07	\$10.07	\$29.27	\$2.36	✓	
APG#	693	ROUTINE POSTPARTUM COMPLICATION										
ICD9 CODE	V24.2	Routine postpartum follow-up	4	6	\$10.20	\$5.60	\$10.02	\$4.49	\$5.14	\$3.24		✓
APG#	694	MATERNAL POSTPARTUM COMPLICATION										
ICD9 CODE	646.80	Other complications of pregnancy, not elsewhere classified	3	6	\$19.65	\$8.09	\$24.92	\$7.19	\$13.64	\$5.19		✓
APG#	721	SYSTEMIC INFECTIOUS DISEASE										
ICD9 CODE	136.9	Other unspecified infectious and parasitic diseases	7	5	\$9.31	\$5.26	\$7.32	\$3.62	\$5.84	\$4.65		✓
APG#	722											
ICD9 CODE	616.10	Inflammatory disease of cervix, vagina, and uterus	12	10	\$18.75	\$4.44	\$15.71	\$3.77	\$11.83	\$2.61	✓	
APG#	736	TIA, CVA, & OTHER CEREBROVASCULAR EVENTS										
ICD9 CODE	436.0	Acute, but ill-defined, cerebrovascular disease	9	6	\$23.42	\$4.54	\$22.02	\$4.15	\$15.97	\$2.61	✓	
APG#	737	HEADACHE										
ICD9 CODE	784.0	Symptoms involving head and neck - headache	10	7	\$14.32	\$6.42	\$15.11	\$5.23	\$8.78	\$2.95	✓	
APG#	738	CENTRAL NERVOUS SYSTEM DISEASES EXCEPT TIA, CVA & HEADACHE										

TOTAL DIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES											Statistical Significance (90 percent)		
MEDICAL DIAGNOSES	ICD9 CODE	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.			
	780.3	General symptoms - convulsions	10	7	\$32.02	\$9.63	\$39.21	\$7.59	\$21.27	\$7.07	✓		
APG#	751	CATARACTS											
ICD9 CODE	366.10	Cataract - senile cataract, unspecified	3	5	\$13.34	\$7.52	\$10.98	\$7.64	\$8.73	\$1.65			✓
ICD9 CODE	366.9	Cataract - unspecified visual disturbance	3	5	\$11.82	\$6.95	\$7.32	\$6.51	\$8.94	\$2.10			✓
APG#	752	REFRACTION DISORDER											
ICD9 CODE	367.9	Disorders of refraction and accommodation	3	5	\$12.18	\$7.72	\$7.32	\$7.14	\$12.38	\$2.84			✓
APG#	753	CONJUNCTIVITIS & OTHER SIMPLE EXTERNAL EYE INFLAMMATION											
ICD9 CODE	373.00	Inflammation of eyelids - blepharitis	5	6	\$10.95	\$5.55	\$11.03	\$4.54	\$7.06	\$4.56			✓
APG#	754	EYE DISEASE EXCEPT CATARACT, REFRACTION DISORDER & CONJUNCTIVITIS											
ICD9 CODE	365.11	Glaucoma - primary open angle glaucoma	3	5	\$15.45	\$14.38	\$14.64	\$4.88	\$3.56	\$16.72			✓
ICD9 CODE	365.9	Glaucoma - unspecified	2	6	\$17.93	\$7.48	\$17.93	\$5.64	\$9.83	\$5.47	✓		
ICD9 CODE	375.15	Disorders of lacrimal system - other disorders	3	4	\$11.01	\$6.59	\$10.52	\$6.83	\$3.96	\$1.09			✓
APG#	766	DENTAL DISEASE											
ICD9 CODE	V58.4	Other after following surgery	5	5	\$14.15	\$6.31	\$6.07	\$6.38	\$14.85	\$4.32			✓
APG#	769	ACUTE NONINFECTIOUS EAR, NOSE, & THROAT DISEASE											
ICD9 CODE	784.7	Symptoms involving head and neck - epistaxis	7	6	\$21.01	\$7.55	\$24.31	\$6.51	\$12.43	\$5.99	✓		
APG#	771	HEARING LOSS											
ICD9 CODE	389.9	Hearing loss - unspecified	5	5	\$6.91	\$7.79	\$5.53	\$2.53	\$4.87	\$11.29			✓
APG#	772	OTHER EAR, NOSE, THROAT, & MOUTH DISEASES											
ICD9 CODE	380.4	Disorders of external ear - impacted cerumen	10	9	\$16.84	\$9.16	\$14.09	\$10.12	\$10.28	\$5.14	✓		
ICD9 CODE	744.00	Anomalies of ear causing impairment of hearing	4	3	\$18.44	\$6.67	\$13.03	\$6.59	\$15.89	\$1.29			✓
APG#	773												
ICD9 CODE	380.10	Disorders of external ear - infective otitis	10	5	\$11.76	\$3.54	\$11.01	\$1.63	\$8.21	\$4.19	✓		
ICD9 CODE	381.01	Nonsuppurative otitis media and Eustachian tube dysfunction	10	4	\$10.36	\$5.72	\$9.66	\$4.19	\$5.23	\$4.93			✓
ICD9 CODE	382.9	Suppurative and unspecified otitis media	10	9	\$7.88	\$4.66	\$7.81	\$2.44	\$4.51	\$3.72			✓
ICD9 CODE	465.9	Acute upper respiratory infections of multiple sites	11	10	\$18.86	\$6.14	\$10.98	\$6.48	\$18.30	\$3.84	✓		
APG#	783	PNEUMONIA											
ICD9 CODE	486	Pneumonia, organism unspecified	8	7	\$22.91	\$3.94	\$15.37	\$2.78	\$21.41	\$2.60	✓		
APG#	784	RESPIRATORY DISEASE EXCEPT EMPHYSEMA, CHRONIC BRONCHITIS & ASTHMA											
ICD9 CODE	786.09	Symptoms involving respiratory system - wheezing	9	6	\$15.98	\$4.36	\$11.46	\$3.88	\$9.91	\$2.85	✓		
APG#	785												
ICD9 CODE	493.90	Asthma - unspecified	10	8	\$33.79	\$17.26	\$28.27	\$16.97	\$23.35	\$7.63	✓		
ICD9 CODE	496	Chronic airway obstruction, not elsewhere classified	9	5	\$9.30	\$3.19	\$3.14	\$2.44	\$11.32	\$2.07			✓
APG#	796	CONGESTIVE HEART FAILURE & ISCHEMIC HEART DISEASE & HYPERTENSION											
ICD9 CODE	413.9	Angina pectoris - other and unspecified	9	11	\$24.69	\$8.01	\$10.98	\$6.62	\$33.31	\$5.62			✓
ICD9 CODE	414.9	Other forms of chronic ischemic heart disease	7	11	\$14.87	\$8.46	\$14.64	\$6.62	\$9.38	\$4.97			✓
ICD9 CODE	428	Heart failure	10	11	\$31.29	\$8.02	\$31.04	\$5.95	\$23.70	\$6.01	✓		
APG#	797	HYPERTENSION											
ICD9 CODE	401.9	Essential hypertension - unspecified	9	12	\$19.81	\$8.26	\$16.37	\$7.09	\$13.18	\$4.64	✓		
APG#	800	CARDIOVASCULAR DISEASE EXCEPT CHF, ISCHEMIC HEART DISEASE & HYPERTENSION											
ICD9 CODE	414.0	Other forms of chronic ischemic heart disease	7	11	\$15.30	\$8.73	\$14.64	\$6.62	\$8.96	\$5.05	✓		
APG#	811	NONINFECTIOUS GASTROENTERITIS											

TOTAL DIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES											Statistical Significance (90 percent)		
MEDICAL DIAGNOSES		APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher	Higher	No
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Significant
ICD9 CODE	558.9	Other noninfectious gastroenteritis and colitis	14	8	\$22.00	\$17.67	\$20.25	\$11.69	\$19.17	\$16.18			✓
APG#	812	ULCERS, GASTRITIS & ESOPHAGITIS											
ICD9 CODE	535.5	Acute gastritis - unspecified gastritis and duodenitis	10	10	\$14.97	\$12.39	\$9.94	\$9.53	\$12.35	\$10.75			✓
APG#	813	FUNCTIONAL GASTROINTESTINAL DISEASE & IRRITABLE BOWEL SYNDROME											
ICD9 CODE	564.0	Constipation	12	11	\$18.68	\$10.99	\$15.92	\$5.06	\$14.08	\$13.24			✓
APG#	814	HEPATOBIILIARY DISEASE											
ICD9 CODE	574.20	Cholelithiasis - calculus of gallbladder without cholecystitis	9	6	\$19.19	\$7.39	\$14.75	\$5.17	\$16.26	\$6.43	✓		
APG#	816	HEMORRHOIDS & OTHER ANAL-RECTAL DISEASES											
ICD9 CODE	569.3	Other disorders of intestine - hemorrhoids	9	9	\$20.54	\$15.82	\$16.37	\$10.12	\$19.38	\$12.37			✓
APG#	817	OTHER GASTROINTESTINAL DISEASES											
ICD9 CODE	789.0	Other symptoms involving abdomen and back	12	11	\$33.02	\$7.01	\$25.61	\$4.07	\$32.35	\$4.22	✓		
APG#	827	MAJOR SIGNS, SYMPTOMS & FINDINGS											
ICD9 CODE	427.5	Cardiac dysrhythmias - cardiac arrest	6	8	\$97.09	\$25.25	\$105.49	\$23.21	\$37.87	\$19.13	✓		
APG#	841	BACK DISORDERS											
ICD9 CODE	724.2	Other and unspecified disorders of back	7	9	\$8.86	\$8.84	\$8.29	\$- .65	\$3.20	\$9.09			✓
APG#	842	MUSCULOSKELETAL DISEASES EXCEPT BACK DISORDERS											
ICD9 CODE	714.0	Rheumatoid arthritis and other inflammatory diseases of joints	8	10	\$9.73	\$6.05	\$8.46	\$4.54	\$5.47	\$4.28			✓
ICD9 CODE	715.90	Osteoarthritis and allied disorders - unspecified	9	9	\$9.89	\$9.24	\$6.56	\$7.07	\$7.23	\$6.11			✓
ICD9 CODE	729.5	Other disorders of soft tissues - pain in limb	9	12	\$12.71	\$6.74	\$6.56	\$3.69	\$13.78	\$6.33			✓
APG#	856	DISEASE OF NAILS											
ICD9 CODE	110.1	Dermatophytosis - of nail	5	5	\$10.64	\$5.21	\$6.56	\$2.53	\$9.30	\$4.73			✓
APG#	857	CHRONIC SKIN ULCER											
ICD9 CODE	707.1	Chronic ulcer of skin - ulcer of lower limb	9	6	\$16.62	\$9.42	\$20.04	\$8.98	\$7.77	\$5.85	✓		
APG#	858	CELLULITIS, IMPETIGO & LYMPHANGITIS											
ICD9 CODE	682.9	Other cellulitis and abscess - unspecified	11	8	\$16.88	\$11.61	\$18.31	\$9.33	\$7.76	\$7.56			✓
APG#	859	BREAST DISEASE											
ICD9 CODE	611.71	Other disorders of breast - signs and symptoms	7	5	\$9.65	\$5.94	\$9.82	\$3.92	\$4.48	\$4.32			✓
APG#	860	OTHER SKIN DISEASES											
ICD9 CODE	217	Benign neoplasm of breast	7	6	\$7.06	\$4.34	\$7.32	\$2.75	\$2.36	\$3.01	✓		
ICD9 CODE	692.9	Contact dermatitis and other eczema - unspecified	9	9	\$17.16	\$16.74	\$14.83	\$15.17	\$9.59	\$9.88			✓
ICD9 CODE	696.1	Psoriasis and similar disorders - other psoriasis	6	7	\$8.24	\$10.65	\$6.94	\$8.78	\$5.95	\$10.36			✓
ICD9 CODE	709.9	Other disorders of skin and subcutaneous tissue	9	7	\$16.92	\$15.46	\$15.08	\$17.78	\$10.22	\$7.95			✓
ICD9 CODE	995.3	Certain adverse effects not elsewhere classified	9	9	\$26.22	\$15.61	\$28.92	\$7.64	\$16.30	\$13.25			✓
APG#	871	DIABETES											
ICD9 CODE	250.00	Diabetes mellitus - without mention of complication	8	9	\$15.03	\$14.36	\$12.04	\$8.78	\$13.38	\$14.78			✓
APG#	872	OBESITY											
ICD9 CODE	278.0	Obesity and other hyperalimentation - obesity	4	8	\$6.46	\$8.44	\$5.92	\$3.89	\$3.80	\$12.88			✓
APG#	873	ENDOCRINE, NUTRITIONAL & METABOLIC DISEASE EXCEPT DIABETES & OBESITY											
ICD9 CODE	272	Disorders of lipid metabolism	6	9	\$7.85	\$8.71	\$8.60	\$4.02	\$2.88	\$10.46			✓
APG#	886	URINARY TRACT INFECTION											
ICD9 CODE	599.0	Other disorders of urethra and urinary tract	15	11	\$15.41	\$9.24	\$11.06	\$9.05	\$14.58	\$4.60			✓
APG#	887	RENAL FAILURE											

TOTAL DIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES												Statistical Significance (90 percent)		
MEDICAL DIAGNOSES		APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital	Higher Phys. Off.	No Significant Difference	
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital Mean	Phys. Off. Mean	Significant Difference	
ICD9 CODE	585	Chronic renal failure	6	4	\$18.81	\$10.98	\$11.93	\$7.45	\$16.83	\$12.33			✓	
APG#	888	URINARY DISEASE EXCEPT URINARY TRACT INFECTION & RENAL FAILURE											✓	
ICD9 CODE	599.7	Other disorders of urethra and urinary tract	13	11	\$18.34	\$15.83	\$20.32	\$19.20	\$8.31	\$6.63			✓	
ICD9 CODE	788.2	Symptoms involving urinary tract - retention	8	9	\$17.65	\$8.61	\$16.03	\$7.24	\$6.93	\$4.29	✓			
APG#	901	BENIGN PROSTATIC HYPERTROPHY											✓	
ICD9 CODE	600	Hyperplasia of prostate	7	7	\$7.78	\$5.12	\$6.07	\$4.16	\$6.24	\$3.70			✓	
APG#	902	MALE REPRODUCTIVE DISEASES EXCEPT BENIGN PROSTATIC HYPERTROPHY												
ICD9 CODE	601.9	Inflammatory diseases of prostate - prostatitis	10	10	\$9.98	\$5.02	\$8.11	\$3.96	\$5.44	\$3.82	✓			
APG#	916	FEMALE GYNECOLOGICAL DISEASE												
ICD9 CODE	V72.3	Gynecological examination	12	8	\$18.34	\$7.60	\$12.08	\$6.38	\$15.45	\$3.20	✓			
APG#	932	AIDS RELATED COMPLEX & HIV INFECTION WITH COMPLICATIONS												
ICD9 CODE	043.9	Arc, unspecified	7	3	\$15.20	\$4.32	\$14.64	\$3.62	\$5.96	\$2.54	✓			
APG#	933	OTHER IMMUNOLOGIC & HEMATOLOGIC DISEASE												
ICD9 CODE	429	Ill-defined descriptions and complications	9	4	\$20.64	\$4.18	\$14.64	\$3.69	\$13.89	\$2.10	✓			
ICD9 CODE	280.9	Iron deficiency anemias - unspecified	7	7	\$14.86	\$2.94	\$9.82	\$3.12	\$9.36	\$0.97	✓			
ICD9 CODE	281.9	Other deficiency anemias - unspecified	6	6	\$8.35	\$3.05	\$9.01	\$3.37	\$2.77	\$1.10	✓			
ICD9 CODE	710.0	Diffuse diseases of connective tissue - systemic	7	6	\$14.86	\$8.73	\$10.98	\$8.91	\$14.76	\$5.24			✓	
APG#	946	ADULT MEDICAL EXAMINATION												
ICD9 CODE	V70.0	Routine general medical examination at office	6	6	\$11.78	\$6.76	\$11.85	\$6.37	\$6.18	\$2.28			✓	
APG#	947	WELL CHILD CARE											✓	
ICD9 CODE	V20.2	Routine infant or child health check	4	6	\$16.40	\$6.45	\$15.60	\$5.05	\$10.12	\$3.02			✓	
APG#	949	CONTRACEPTION & PROCREATIVE MANAGEMENT												
ICD9 CODE	V25.09	General counseling and advice, other (family planning)	5	6	\$12.54	\$3.25	\$8.34	\$3.10	\$9.65	\$1.72	✓			
APG#	950	REPEAT PRESCRIPTION												
ICD9 CODE	V68.1	Issue of repeat prescriptions	7	6	\$5.80	\$3.30	\$3.04	\$2.69	\$7.82	\$1.81			✓	
APG#	951	NONSPECIFIC SIGNS & SYMPTOMS & OTHER CONTACTS WITH HEALTH SERVICES												
ICD9 CODE	V67.0	Follow-up examination following surgery	8	8	\$11.72	\$7.47	\$11.42	\$7.37	\$9.03	\$3.19			✓	
ICD9 CODE	V67.2	Follow-up examination following chemotherapy	4	4	\$18.29	\$6.94	\$15.60	\$7.32	\$13.16	\$1.70			✓	
APG#	976													
ICD9 CODE	V22.2	Normal pregnancy, pregnant state, incidence	7	4	\$14.27	\$6.42	\$11.75	\$2.66	\$12.80	\$8.12			✓	
AGGREGATE MEAN FOR ALL MEDICAL VISITS			695	643	\$18.80	\$9.04	\$12.15	\$6.38	\$20.17	\$9.46	✓			

TOTAL INDIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES

MEDICAL DIAGNOSES	APG#	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
APG#	601	HEMATOLOGICAL MALIGNANCY											
ICD9 CODE	204.0	Acute lymphoid leukemia	4	4	\$144.86	\$44.43	\$155.78	\$35.76	\$35.47	\$30.97	✓		
APG#	602	PROSTATIC MALIGNANCY											
ICD9 CODE	185	Malignant neoplasm prostate	5	8	\$84.44	\$55.94	\$65.35	\$43.98	\$55.64	\$33.32			✓
APG#	603	LUNG MALIGNANCY											
ICD9 CODE	162.9	Malignant neoplasm of bronchus	7	6	\$91.58	\$54.57	\$98.77	\$44.33	\$35.18	\$38.38	✓		
APG#	604	SKIN MALIGNANCY											
ICD9 CODE	173.9	Other malignant neoplasm of skin	5	6	\$61.94	\$39.08	\$52.27	\$33.74	\$41.33	\$14.97			✓
APG#	605	MALIGNANCIES EXCEPT HEMATOLOGICAL, PROSTATIC, LUNG & SKIN											
ICD9 CODE	174.9	Malignant neoplasm of female breast	7	6	\$74.21	\$34.34	\$65.35	\$23.96	\$39.33	\$20.01	✓		
APG#	616	POISONING											
ICD9 CODE	989.5	Toxic effect of other substances, drugs, chemicals	5	4	\$194.66	\$104.68	\$142.51	\$86.45	\$187.88	\$77.74			✓
APG#	632	BURNS, & SKIN & SOFT TISSUE INJURY											
ICD9 CODE	883.0	Open wound of finger(s) without infection	9	8	\$82.65	\$39.09	\$50.53	\$37.03	\$76.83	\$21.02			✓
ICD9 CODE	V58.3	Attention to surgical dressings and bandages	15	7	\$42.79	\$27.81	\$35.85	\$19.45	\$26.72	\$16.23			✓
APG#	633	FRACTURE, DISLOCATION & SPRAIN											
ICD9 CODE	820.8	Fracture of neck of femur unspecified	6	8	\$117.59	\$62.19	\$117.83	\$51.16	\$69.68	\$49.71			✓
APG#	648												
ICD9 CODE	290.0	Senile and presenile organic psychosis	7	5	\$107.28	\$45.91	\$101.05	\$42.55	\$42.03	\$11.55	✓		
APG#	649												
ICD9 CODE	300.0	Neurotic disorders, anxiety states	7	8	\$98.92	\$55.59	\$75.79	\$54.46	\$54.87	\$22.09	✓		
APG#	661												
ICD9 CODE	305.90	Nondependent abuse of drugs, alcohol	7	2	\$176.10	\$32.02	\$148.96	\$32.02	\$123.05	\$4.03			✓
APG#	662												
ICD9 CODE	303.90	Alcohol dependence syndrome, other	5	5	\$150.72	\$41.46	\$101.05	\$34.87	\$106.12	\$18.59	✓		
APG#	691	ROUTINE PRENATAL CARE											
ICD9 CODE	V22.1	Supervision of other normal pregnancy	4	6	\$110.55	\$30.50	\$38.03	\$27.29	\$156.00	\$19.48			✓
APG#	692	MATERNAL ANTEPARTUM COMPLICATION											
ICD9 CODE	644.13	Early or threatened labor, threatened abortion	5	5	\$132.13	\$49.91	\$44.35	\$48.27	\$162.45	\$27.93			✓
APG#	693	ROUTINE POSTPARTUM COMPLICATION											
ICD9 CODE	V24.2	Routine postpartum follow-up	4	6	\$44.71	\$30.80	\$38.57	\$22.59	\$14.19	\$21.94			✓
APG#	694	MATERNAL POSTPARTUM COMPLICATION											
ICD9 CODE	646.80	Other complications of pregnancy	2	6	\$34.26	\$46.65	\$34.26	\$40.59	\$4.08	\$33.29			✓
APG#	721	SYSTEMIC INFECTIOUS DISEASE											
ICD9 CODE	136.9	Other unspecified infectious and parasitic diseases	7	5	\$61.43	\$55.56	\$44.35	\$53.64	\$33.30	\$25.53			✓
APG#	722												
ICD9 CODE	616.10	Inflammatory disease of cervix, vagina	12	10	\$62.26	\$26.91	\$45.45	\$22.59	\$40.36	\$12.26	✓		
APG#	736	TIA, CVA, & OTHER CEREBROVASCULAR EVENTS											
ICD9 CODE	436.0	Acute, but ill-defined, cerebrovascular disease	9	6	\$116.81	\$42.95	\$87.82	\$38.40	\$72.88	\$23.37	✓		
APG#	737	HEADACHE											
ICD9 CODE	784.0	Symptoms involving head and neck	10	10	\$72.81	\$32.71	\$77.34	\$22.26	\$35.65	\$25.64	✓		
APG#	738	CENTRAL NERVOUS SYSTEM DISEASES EXCEPT TIA, CVA, & HEADACHE											

TOTAL INDIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES											Statistical Significance (90 percent)		
MEDICAL DIAGNOSES		APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital	Higher Phys. Off.	No Significant Difference
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Mean	Mean	Difference
ICD9 CODE	780.3	General symptoms - convulsions	10	7	\$109.37	\$77.96	\$91.02	\$69.72	\$38.03	\$23.14	✓		
APG#	751	CATARACTS											
ICD9 CODE	366.10	Cataract - senile cataract, unspec	3	5	\$60.47	\$69.32	\$62.24	\$59.76	\$6.44	\$25.20			✓
ICD9 CODE	366.9	Cataract - unspecified visual distu	3	5	\$58.62	\$69.32	\$65.84	\$59.76	\$16.26	\$25.20			✓
APG#	752	REFRACTION DISORDER											
ICD9 CODE	367.9	Disorders of refraction and accom	3	5	\$67.61	\$69.27	\$62.24	\$59.76	\$17.60	\$25.13			✓
APG#	753	CONJUNCTIVITIS & OTHER SIMPLE EXTERNAL EYE INFLAMMATION											
ICD9 CODE	373.00	Inflammation of eyelids - blephariti	5	6	\$44.36	\$33.35	\$46.68	\$27.10	\$18.30	\$18.98			✓
APG#	754	EYE DISEASE EXCEPT CATARACT, REFRACTION DISORDER & CONJUNCTIVITIS											
ICD9 CODE	365.11	Glaucoma - primary open angle gl	3	5	\$55.51	\$61.84	\$54.45	\$65.90	\$9.43	\$21.34			✓
ICD9 CODE	365.9	Glaucoma - unspecified	2	6	\$29.45	\$60.94	\$29.45	\$68.37	\$13.36	\$26.80			✓
ICD9 CODE	375.15	Disorders of lacrimal system - oth	3	4	\$56.33	\$45.20	\$46.68	\$38.89	\$22.75	\$18.04			✓
APG#	766	DENTAL DISEASE											
ICD9 CODE	V58.4	Other after following surgery	5	5	\$78.00	\$26.70	\$29.47	\$21.46	\$102.20	\$12.74			✓
APG#	769	ACUTE NONINFECTIOUS EAR, NOSE, & THROAT DISEASE											
ICD9 CODE	784.7	Symptoms involving head and neck	7	6	\$92.63	\$43.40	\$87.82	\$31.05	\$50.64	\$29.08	✓		
APG#	771	HEARING LOSS											
ICD9 CODE	389.9	Hearing loss - unspecified	5	5	\$62.98	\$28.81	\$29.47	\$18.74	\$54.44	\$14.83			✓
APG#	772	OTHER EAR, NOSE, THROAT, & MOUTH DISEASES											
ICD9 CODE	380.4	Disorders of external ear - impact	10	9	\$67.25	\$36.85	\$45.30	\$32.18	\$47.40	\$14.54	✓		
ICD9 CODE	744.00	Anomalies of ear causing impairm	4	4	\$66.07	\$33.15	\$43.34	\$32.20	\$55.17	\$6.23			✓
APG#	773												
ICD9 CODE	380.10	Disorders of external ear - infecti	10	5	\$41.23	\$24.74	\$38.42	\$23.24	\$17.61	\$5.07			✓
ICD9 CODE	381.01	Nonsuppurative otitis media and E	10	4	\$44.68	\$27.29	\$38.95	\$26.82	\$20.98	\$9.41			✓
ICD9 CODE	382.9	Suppurative and unspecified otitis	10	9	\$32.62	\$21.91	\$25.16	\$22.64	\$21.14	\$9.70			✓
ICD9 CODE	465.9	Acute upper respiratory infections	11	10	\$54.81	\$27.22	\$50.53	\$19.92	\$35.23	\$17.45	✓		
APG#	783	PNEUMONIA											
ICD9 CODE	486	Pneumonia, organism unspecified	8	7	\$78.04	\$42.76	\$67.94	\$33.15	\$50.10	\$20.66	✓		
APG#	784	RESPIRATORY DISEASE EXCEPT EMPHYSEMA, CHRONIC BRONCHITIS & ASTHMA											
ICD9 CODE	786.09	Symptoms involving respiratory sy	9	6	\$90.90	\$51.62	\$87.82	\$38.02	\$46.97	\$37.36			✓
APG#	785												
ICD9 CODE	493.90	Asthma - unspecified	10	8	\$124.17	\$109.24	\$141.54	\$107.71	\$42.09	\$57.01			✓
ICD9 CODE	496	Chronic airway obstruction, not el	9	5	\$37.64	\$34.75	\$23.34	\$29.05	\$25.75	\$26.75			✓
APG#	796	CONGESTIVE HEART FAILURE & ISCHEMIC HEART DISEASE & HYPERTENSION											
ICD9 CODE	413.9	Angina pectoris - other and unspe	9	11	\$105.09	\$80.65	\$87.82	\$74.93	\$43.12	\$34.08			✓
ICD9 CODE	414.9	Other forms of chronic ischemic h	7	11	\$85.10	\$80.44	\$87.27	\$79.83	\$26.65	\$31.12			✓
ICD9 CODE	428	Heart failure	10	11	\$111.65	\$65.71	\$97.20	\$59.49	\$48.16	\$38.31	✓		
APG#	797	HYPERTENSION											
ICD9 CODE	401.9	Essential hypertension - unspeci	9	12	\$82.29	\$72.90	\$87.82	\$71.33	\$24.19	\$26.15			✓
APG#	800	CARDIOVASCULAR DISEASE EXCEPT CHF, ISCHEMIC HEART DISEASE & HYPERTENSION											
ICD9 CODE	414.0	Other forms of chronic ischemic h	7	11	\$86.15	\$75.12	\$87.27	\$59.49	\$25.57	\$36.69			✓
APG#	811	NONINFECTIOUS GASTROENTERITIS											

TOTAL INDIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES

MEDICAL DIAGNOSES	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
		Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off Mean	No Significant Difference
ICD9 CODE	558.9 Other noninfectious gastroenteritis	14	8	\$102.32	\$59.78	\$88.26	\$44.52	\$65.14	\$55.58			✓
APG#	812 ULCERS, GASTRITIS & ESOPHAGITIS											
ICD9 CODE	535.5 Acute gastritis - unspecified gastr	10	10	\$77.03	\$53.10	\$76.97	\$31.74	\$36.82	\$50.84			✓
APG#	813 FUNCTIONAL GASTROINTESTINAL DISEASE & IRRITABLE BOWEL SYNDROME											
ICD9 CODE	564.0 Constipation	12	11	\$59.16	\$33.78	\$43.77	\$31.04	\$48.16	\$17.13			✓
APG#	814 HEPATOBILIARY DISEASE											
ICD9 CODE	574.20 Cholelithiasis - calculus of gallblad	9	6	\$104.17	\$49.76	\$87.82	\$47.54	\$76.67	\$27.47	✓		
APG#	816 HEMORRHOIDS & OTHER ANAL-RECTAL DISEASES											
ICD9 CODE	569.3 Other disorders of intestine - hem	10	9	\$80.78	\$48.60	\$81.81	\$39.79	\$45.88	\$25.81	✓		
APG#	817 OTHER GASTROINTESTINAL DISEASES											
ICD9 CODE	789.0 Other symptoms involving abdomi	12	11	\$128.63	\$46.37	\$139.79	\$38.49	\$81.80	\$25.65	✓		
APG#	827 MAJOR SIGNS, SYMPTOMS & FINDINGS											
ICD9 CODE	427.5 Cardiac dysrhythmias - cardiac ar	6	8	\$101.60	\$70.03	\$97.35	\$43.81	\$46.42	\$64.04			✓
APG#	841 BACK DISORDERS											
ICD9 CODE	724.2 Other and unspecified disorders of	7	9	\$45.16	\$54.21	\$37.14	\$41.39	\$20.34	\$31.53			✓
APG#	842 MUSCULOSKELETAL DISEASES EXCEPT BACK DISORDERS											
ICD9 CODE	714.0 Rheumatoid arthritis and other inf	8	10	\$62.85	\$53.57	\$68.16	\$52.53	\$21.93	\$33.32			✓
ICD9 CODE	715.90 Osteoarthritis and allied disorder	9	9	\$59.51	\$52.91	\$46.68	\$56.48	\$30.44	\$33.18			✓
ICD9 CODE	729.5 Other disorders of soft tissues - p	9	12	\$57.16	\$57.10	\$60.00	\$42.34	\$26.54	\$53.38			✓
APG#	856 DISEASE OF NAILS											
ICD9 CODE	110.1 Dermatophytosis - of nail	5	5	\$59.15	\$35.40	\$29.47	\$39.79	\$59.88	\$11.47			✓
APG#	857 CHRONIC SKIN ULCER											
ICD9 CODE	707.1 Chronic ulcer of skin - ulcer of low	9	6	\$64.36	\$43.20	\$65.84	\$42.02	\$31.27	\$11.62			✓
APG#	858 CELLULITIS, IMPETIGO & LYMPHANGITIS											
ICD9 CODE	682.9 Other cellulitis and abscess - uns	11	8	\$69.87	\$54.26	\$65.87	\$43.90	\$34.84	\$29.53			✓
APG#	859 BREAST DISEASE											
ICD9 CODE	611.71 Other disorders of breast - signs &	7	5	\$44.11	\$34.60	\$44.21	\$29.05	\$11.01	\$22.93			✓
APG#	860 OTHER SKIN DISEASES											
ICD9 CODE	217 Benign neoplasm of breast	7	6	\$51.02	\$29.85	\$36.84	\$25.75	\$33.79	\$10.94			✓
ICD9 CODE	692.9 Contact dermatitis and other ecze	9	10	\$55.81	\$48.53	\$51.23	\$45.07	\$29.59	\$14.91			✓
ICD9 CODE	696.1 Psoriasis and similar disorders - o	6	9	\$44.90	\$38.25	\$42.83	\$35.03	\$10.94	\$9.85			✓
ICD9 CODE	709.9 Other disorders of skin and subcu	9	7	\$61.67	\$54.59	\$66.31	\$52.54	\$20.99	\$7.40			✓
ICD9 CODE	995.3 Certain adverse affects not elsew	9	9	\$82.82	\$87.38	\$101.82	\$87.41	\$42.18	\$34.82			✓
APG#	871 DIABETES											
ICD9 CODE	250.00 Diabetes mellitus - without mentio	8	9	\$65.24	\$46.67	\$63.98	\$35.29	\$21.60	\$26.59			✓
APG#	872 OBESITY											
ICD9 CODE	278.0 Obesity and other hyperalimentation	4	8	\$46.37	\$41.60	\$30.02	\$30.61	\$34.97	\$29.66			✓
APG#	873 ENDOCRINE, NUTRITIONAL & METABOLIC DISEASE EXCEPT DIABETES & OBESITY											
ICD9 CODE	272 Disorders of lipid metabolism	6	9	\$59.60	\$42.44	\$52.73	\$29.05	\$31.12	\$36.91			✓
APG#	886 URINARY TRACT INFECTION											
ICD9 CODE	599.0 Other disorders of urethra and uril	15	11	\$61.49	\$39.16	\$44.21	\$34.87	\$44.83	\$14.94	✓		
APG#	887 RENAL FAILURE											

TOTAL INDIRECT RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES													
MEDICAL DIAGNOSES ICD9 CODE		APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Higher Hospital Mean	Significance Higher Phys. Off. Mean	(90 percent) No Significant Difference
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.			
585		Chronic renal failure	6	4	\$61.74	\$50.48	\$36.74	\$57.16	\$57.79	\$18.48			
APG#	888	URINARY DISEASE EXCEPT URINARY TRACT INFECTION & RENAL FAILURE											
ICD9 CODE	599.7	Other disorders of urethra and urin	13	11	\$82.39	\$55.73	\$67.41	\$48.27	\$30.87	\$22.47	✓		
ICD9 CODE	788.2	Symptoms involving urinary tract	8	9	\$66.80	\$33.78	\$64.06	\$34.87	\$21.84	\$8.99	✓		
APG#	901	BENIGN PROSTATIC HYPERTROPHY											
ICD9 CODE	600	Hyperplasia of prostate	7	7	\$48.25	\$30.89	\$46.68	\$32.18	\$24.61	\$9.22			✓
APG#	902	MALE REPRODUCTIVE DISEASES EXCEPT BENIGN PROSTATIC HYPERTROPHY											
ICD9 CODE	601.9	Inflammatory diseases of prostate	10	10	\$54.55	\$26.50	\$54.74	\$23.99	\$18.58	\$9.51	✓		
APG#	916	FEMALE GYNECOLOGICAL DISEASE											
ICD9 CODE	727.3	Gynecological examination	12	8	\$59.12	\$34.92	\$42.11	\$36.38	\$43.08	\$7.26	✓		
APG#	932	AIDS RELATED COMPLEX & HIV INFECTION WITH COMPLICATIONS											
ICD9 CODE	043.9	Arc, unspecified	7	3	\$80.74	\$93.86	\$56.71	\$91.18	\$52.19	\$64.20			✓
APG#	933	OTHER IMMUNOLOGIC & HEMATOLOGIC DISEASE											
ICD9 CODE	429	Ill-defined descriptions and compl	9	4	\$92.70	\$75.52	\$58.94	\$60.73	\$54.26	\$59.36			✓
ICD9 CODE	280.9	Iron deficiency anemias - unspeci	7	7	\$79.13	\$38.71	\$70.01	\$29.92	\$35.02	\$24.44	✓		
ICD9 CODE	281.9	Other deficiency anemias - unspe	6	6	\$67.76	\$45.28	\$65.65	\$38.13	\$20.32	\$23.43			✓
ICD9 CODE	710.0	Diffuse diseases of connective tis	7	7	\$68.68	\$52.92	\$70.01	\$46.49	\$18.01	\$21.06			✓
APG#	946	ADULT MEDICAL EXAMINATION											
ICD9 CODE	770.0	Routine general medical examinatio	6	7	\$83.15	\$61.48	\$73.16	\$59.85	\$41.30	\$16.57			✓
APG#	947	WELL CHILD CARE											
ICD9 CODE	720.2	Routine infant or child health chec	4	6	\$58.34	\$39.56	\$60.57	\$37.52	\$34.93	\$17.61			✓
APG#	949	CONTRACEPTION & PROCREATIVE MANAGEMENT											
ICD9 CODE	725.09	General counseling and advice, of	5	6	\$52.85	\$26.57	\$44.57	\$21.32	\$18.17	\$12.46	✓		
APG#	950	REPEAT PRESCRIPTION											
ICD9 CODE	768.1	Issue of repeat prescriptions	7	6	\$23.11	\$26.09	\$22.10	\$25.73	\$11.85	\$10.94			✓
APG#	951	NONSPECIFIC SIGNS & SYMPTOMS & OTHER CONTACTS WITH HEALTH SERVICES											
ICD9 CODE	767.0	Follow-up examination following st	8	8	\$39.24	\$32.68	\$41.82	\$34.25	\$15.52	\$14.99			✓
ICD9 CODE	767.2	Follow-up examination following cl	4	4	\$70.00	\$56.15	\$75.33	\$37.75	\$30.45	\$45.89			✓
APG#	976												
ICD9 CODE	722.2	Normal pregnancy, pregnant state	7	5	\$74.89	\$24.82	\$49.29	\$21.18	\$70.71	\$11.49			✓
AGGREGATE MEAN FOR ALL MEDICAL VISITS			694	657	\$76.27	\$48.86	\$62.24	\$39.90	\$55.99	\$32.15	✓		

TOTAL RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES

MEDICAL DIAGNOSES	APG#	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
ICD9 CODE	601	HEMATOLOGICAL MALIGNANCY											
APG#	204.0	Acute lymphoid leukemia	4	5	\$173.11	\$65.21	\$191.41	\$25.77	\$48.61	\$64.07	✓		
ICD9 CODE	602	PROSTATIC MALIGNANCY											
APG#	185	Malignant neoplasm prostate	6	8	\$90.68	\$68.01	\$76.63	\$53.62	\$56.67	\$41.75			✓
ICD9 CODE	603	LUNG MALIGNANCY											
APG#	162.9	Malignant neoplasm of bronchus	7	7	\$109.61	\$53.89	\$101.79	\$47.96	\$40.91	\$38.47	✓		
ICD9 CODE	604	SKIN MALIGNANCY											
APG#	173.9	Other malignant neoplasm of skin	5	6	\$78.75	\$51.45	\$67.77	\$46.25	\$47.53	\$23.59			✓
ICD9 CODE	605	MALIGNANCIES EXCEPT HEMATOLOGICAL, PROSTATIC, LUNG & SKIN											
APG#	174.9	Malignant neoplasm of female breast	7	7	\$90.90	\$38.56	\$101.64	\$25.77	\$47.25	\$30.59	✓		
ICD9 CODE	616	POISONING											
APG#	989.5	Toxic effect of other substances, except drugs	5	4	\$229.63	\$131.47	\$171.43	\$108.44	\$211.33	\$100.45			✓
ICD9 CODE	632	BURNS, & SKIN & SOFT TISSUE INJURY											
APG#	883.0	Open wound of finger(s) without nail	9	8	\$100.95	\$48.75	\$75.93	\$47.75	\$84.58	\$24.48			✓
ICD9 CODE	V58.3	Attention to surgical dressings and bandages	15	7	\$56.41	\$35.35	\$50.46	\$29.60	\$28.17	\$16.66	✓		
ICD9 CODE	633	FRACTURE, DISLOCATION & SPRAIN											
APG#	820.8	Fracture of neck of femur unspecified	6	8	\$151.55	\$75.15	\$155.61	\$61.80	\$89.82	\$64.66	✓		
ICD9 CODE	648												
APG#	290.0	Senile and presenile organic psychosis	7	5	\$130.69	\$50.54	\$143.75	\$46.30	\$51.87	\$10.69	✓		
ICD9 CODE	649												
APG#	300.0	Neurotic disorders, anxiety states	7	8	\$118.97	\$59.92	\$109.43	\$56.48	\$63.19	\$22.00	✓		
ICD9 CODE	661												
APG#	305.90	Nondependent abuse of drugs, other	7	2	\$234.52	\$39.21	\$196.58	\$39.21	\$169.41	\$4.60			✓
ICD9 CODE	662												
APG#	303.90	Alcohol dependence syndrome, other	5	5	\$172.65	\$47.40	\$126.45	\$44.99	\$116.25	\$17.67	✓		
ICD9 CODE	691	ROUTINE PRENATAL CARE											
APG#	V22.1	Supervision of other normal pregnancy	4	6	\$122.94	\$37.10	\$50.52	\$35.83	\$161.28	\$18.78			✓
ICD9 CODE	692	MATERNAL ANTEPARTUM COMPLICATION											
APG#	644.13	Early or threatened labor, threatened	5	5	\$174.95	\$58.50	\$80.42	\$59.12	\$189.55	\$29.98			✓
ICD9 CODE	693	ROUTINE POSTPARTUM COMPLICATION											
APG#	V24.2	Routine postpartum follow-up	4	6	\$54.91	\$36.41	\$51.72	\$31.79	\$14.21	\$21.47			✓
ICD9 CODE	694	MATERNAL POSTPARTUM COMPLICATION											
APG#	646.80	Other complications of pregnancy	3	6	\$42.49	\$54.74	\$41.31	\$51.32	\$18.19	\$33.55			✓
ICD9 CODE	721	SYSTEMIC INFECTIOUS DISEASE											
APG#	136.9	Other unspecified infectious and parasitic	7	5	\$70.74	\$60.83	\$61.61	\$57.26	\$36.36	\$28.66			✓
ICD9 CODE	722												
APG#	616.10	Inflammatory disease of cervix, vagina	12	10	\$81.01	\$31.35	\$64.78	\$28.20	\$47.16	\$13.13	✓		
ICD9 CODE	736	TIA, CVA, & OTHER CEREBROVASCULAR EVENTS											
APG#	436.0	Acute, but ill-defined, cerebrovascular	9	6	\$140.23	\$47.50	\$118.97	\$44.94	\$85.92	\$23.80	✓		
ICD9 CODE	737	HEADACHE											
APG#	784.0	Symptoms involving head and neck	10	10	\$87.13	\$37.20	\$93.96	\$26.68	\$42.63	\$28.22	✓		
ICD9 CODE	738	CENTRAL NERVOUS SYSTEM DISEASES EXCEPT TIA, CVA & HEADACHE											

TOTAL RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES

MEDICAL DIAGNOSES		APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital	Higher Phys. Off.	No Significant Difference
ICD9 CODE	780.3	General symptoms - convulsions	10	7	\$141.39	\$87.59	\$129.37	\$77.31	\$53.80	\$26.94	✓		
APG#	751	CATARACTS											
ICD9 CODE	366.10	Cataract - senile cataract, unsp	3	5	\$73.81	\$76.83	\$71.87	\$69.98	\$10.60	\$26.03			✓
ICD9 CODE	366.9	Cataract - unspecified visual distu	3	5	\$70.44	\$76.27	\$71.87	\$67.40	\$22.44	\$25.70			✓
APG#	752	REFRACTION DISORDER											
ICD9 CODE	367.9	Disorders of refraction and accom	3	5	\$79.79	\$76.99	\$88.49	\$67.40	\$16.60	\$24.25			✓
APG#	753	CONJUNCTIVITIS & OTHER SIMPLE EXTERNAL EYE INFLAMMATION											
ICD9 CODE	373.00	Inflammation of eyelids - blephar	5	6	\$55.32	\$38.90	\$63.27	\$31.09	\$19.85	\$19.91			✓
APG#	754	EYE DISEASE EXCEPT CATARACT, REFRACTION DISORDER & CONJUNCTIVITIS											
ICD9 CODE	365.11	Glaucoma - primary open angle gl	3	5	\$70.97	\$76.22	\$73.80	\$77.30	\$8.61	\$32.72			✓
ICD9 CODE	365.9	Glaucoma - unspecified	2	6	\$47.38	\$68.42	\$47.38	\$74.00	\$23.19	\$31.15			✓
ICD9 CODE	375.15	Disorders of lacrimal system - oth	3	4	\$67.34	\$51.79	\$61.87	\$44.87	\$23.24	\$18.12			✓
APG#	766	DENTAL DISEASE											
ICD9 CODE	V58.4	Other after following surgery	5	5	\$92.16	\$33.01	\$45.64	\$25.63	\$114.02	\$16.45			✓
APG#	769	ACUTE NONINFECTIOUS EAR, NOSE, & THROAT DISEASE											
ICD9 CODE	784.7	Symptoms involving head and neck	7	6	\$113.64	\$50.94	\$120.87	\$38.81	\$53.92	\$5.17	✓		
APG#	771	HEARING LOSS											
ICD9 CODE	389.9	Hearing loss - unspecified	5	5	\$69.89	\$36.60	\$33.99	\$20.05	\$57.99	\$25.12			✓
APG#	772	OTHER EAR, NOSE, THROAT, & MOUTH DISEASES											
ICD9 CODE	380.4	Disorders of external ear - impact	10	9	\$84.09	\$46.01	\$67.43	\$44.21	\$51.34	\$17.48	✓		
ICD9 CODE	744.00	Anomalies of ear causing impairm	4	4	\$84.51	\$38.15	\$69.65	\$37.13	\$56.96	\$7.53			✓
APG#	773												
ICD9 CODE	380.10	Disorders of external ear - infecti	10	5	\$52.99	\$28.28	\$53.98	\$25.77	\$18.38	\$8.87	✓		
ICD9 CODE	381.01	Nonsuppurative otitis media and E	10	5	\$55.04	\$31.87	\$52.93	\$28.53	\$21.61	\$11.61	✓		
ICD9 CODE	382.9	Suppurative and unspecified otitis	10	9	\$40.49	\$26.57	\$33.03	\$25.08	\$20.55	\$10.52	✓		
ICD9 CODE	465.9	Acute upper respiratory infections	11	10	\$73.67	\$33.36	\$75.98	\$28.31	\$47.97	\$17.55	✓		
APG#	783	PNEUMONIA											
ICD9 CODE	486	Pneumonia, organism unspecified	8	7	\$100.95	\$46.69	\$87.11	\$40.58	\$59.37	\$20.49	✓		
APG#	784	RESPIRATORY DISEASE EXCEPT EMPHYSEMA, CHRONIC BRONCHITIS & ASTHMA											
ICD9 CODE	786.09	Symptoms involving respiratory sy	9	6	\$106.88	\$55.98	\$101.64	\$42.15	\$50.23	\$36.13	✓		
APG#	785												
ICD9 CODE	493.90	Asthma - unspecified	10	8	\$157.95	\$126.50	\$177.52	\$128.13	\$51.79	\$62.14			✓
ICD9 CODE	496	Chronic airway obstruction, not el	9	5	\$46.94	\$37.95	\$27.32	\$32.59	\$32.62	\$28.70			✓
APG#	796	CONGESTIVE HEART FAILURE & ISCHEMIC HEART DISEASE & HYPERTENSION											
ICD9 CODE	413.9	Angina pectoris - other and unsp	9	11	\$129.77	\$88.66	\$96.11	\$82.77	\$65.75	\$33.51			✓
ICD9 CODE	414.9	Other forms of chronic ischemic h	7	12	\$99.97	\$88.20	\$95.74	\$86.11	\$33.22	\$30.38			✓
ICD9 CODE	428	Heart failure	10	11	\$142.94	\$73.73	\$136.33	\$61.05	\$61.52	\$39.78	✓		
APG#	797	HYPERTENSION											
ICD9 CODE	401.9	Essential hypertension - unspeci	9	12	\$102.09	\$81.17	\$98.88	\$79.15	\$33.25	\$25.05			✓
APG#	800	CARDIOVASCULAR DISEASE EXCEPT CHF, ISCHEMIC HEART DISEASE & HYPERTENSION											
ICD9 CODE	414.0	Other forms of chronic ischemic h	7	11	\$101.45	\$83.85	\$95.74	\$64.69	\$31.58	\$35.63			✓
APG#	811	NONINFECTIOUS GASTROENTERITIS											

TOTAL RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES											Statistical Significance (90 percent)		
MEDICAL DIAGNOSES	ICD9 CODE	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.			
ICD9 CODE	558.9	Other noninfectious gastroenteritis	14	8	\$124.32	\$77.45	\$115.12	\$50.56	\$82.49	\$68.43			
APG#	812	ULCERS, GASTRITIS & ESOPHAGITIS											
ICD9 CODE	535.5	Acute gastritis - unspecified gastr	10	10	\$92.00	\$65.49	\$86.91	\$42.20	\$46.06	\$60.06			✓
APG#	813	FUNCTIONAL GASTROINTESTINAL DISEASE & IRRITABLE BOWEL SYNDROME											
ICD9 CODE	564.0	Constipation	12	11	\$77.84	\$44.77	\$68.77	\$36.40	\$58.79	\$25.98			✓
APG#	814	HEPATOBIILIARY DISEASE											
ICD9 CODE	574.20	Cholelithiasis - calculus of gallblad	9	6	\$123.36	\$57.16	\$77.52	\$54.20	\$84.97	\$30.37	✓		
APG#	816	HEMORRHOIDS & OTHER ANAL-RECTAL DISEASES											
ICD9 CODE	569.3	Other disorders of intestine - hem	10	9	\$99.27	\$64.43	\$106.03	\$56.61	\$57.71	\$31.45			✓
APG#	817	OTHER GASTROINTESTINAL DISEASES											
ICD9 CODE	789.0	Other symptoms involving abdom	12	11	\$161.65	\$53.38	\$182.86	\$44.99	\$102.65	\$26.53	✓		
APG#	827	MAJOR SIGNS, SYMPTOMS & FINDINGS											
ICD9 CODE	427.5	Cardiac dysrhythmias - cardiac ar	6	8	\$198.69	\$95.29	\$198.56	\$71.98	\$76.51	\$69.44	✓		
APG#	841	BACK DISORDERS											
ICD9 CODE	724.2	Other and unspecified disorders o	7	9	\$54.02	\$63.06	\$45.48	\$47.96	\$21.65	\$39.57			✓
APG#	842	MUSCULOSKELETAL DISEASES EXCEPT BACK DISORDERS											
ICD9 CODE	714.0	Rheumatoid arthritis and other infl	8	10	\$72.58	\$59.62	\$80.44	\$61.11	\$22.90	\$33.74			✓
ICD9 CODE	715.90	Osteoarthritis and allied disorder	9	9	\$69.39	\$62.16	\$65.52	\$73.06	\$29.05	\$34.34			✓
ICD9 CODE	729.5	Other disorders of soft tissues - p	9	12	\$69.87	\$63.85	\$70.98	\$45.68	\$37.85	\$54.51			✓
APG#	856	DISEASE OF NAILS											
ICD9 CODE	110.1	Dermatophytosis - of nail	5	5	\$69.79	\$40.61	\$35.54	\$42.01	\$68.25	\$14.47			✓
APG#	857	CHRONIC SKIN ULCER											
ICD9 CODE	707.1	Chronic ulcer of skin - ulcer of low	9	6	\$80.98	\$52.62	\$74.89	\$50.31	\$35.19	\$10.50	✓		
APG#	858	CELLULITIS, IMPETIGO & LYMPHANGITIS											
ICD9 CODE	682.9	Other cellulitis and abscess - uns	11	8	\$86.75	\$65.87	\$84.97	\$56.11	\$39.98	\$35.45			✓
APG#	859	BREAST DISEASE											
ICD9 CODE	611.71	Other disorders of breast - signs a	7	5	\$53.76	\$40.54	\$50.98	\$41.38	\$9.14	\$21.62			✓
APG#	860	OTHER SKIN DISEASES											
ICD9 CODE	217	Benign neoplasm of breast	7	6	\$58.08	\$34.19	\$42.91	\$32.07	\$32.04	\$10.29			✓
ICD9 CODE	692.9	Contact dermatitis and other ecze	9	10	\$72.97	\$63.60	\$65.74	\$63.34	\$34.62	\$14.58			✓
ICD9 CODE	696.1	Psoriasis and similar disorders - o	6	9	\$53.14	\$46.53	\$52.04	\$42.01	\$11.68	\$13.87			✓
ICD9 CODE	709.9	Other disorders of skin and subcu	9	7	\$78.59	\$70.05	\$90.60	\$69.13	\$29.80	\$8.71			✓
ICD9 CODE	995.3	Certain adverse affects not elsew	9	9	\$109.04	\$102.99	\$116.57	\$92.64	\$49.44	\$45.28			✓
APG#	871	DIABETES											
ICD9 CODE	250.00	Diabetes mellitus - without mentio	8	9	\$80.27	\$61.02	\$77.43	\$50.17	\$31.44	\$30.47			✓
APG#	872	OBESITY											
ICD9 CODE	278.0	Obesity and other hyperalimentati	4	8	\$52.83	\$50.04	\$38.20	\$36.81	\$32.73	\$41.50			✓
APG#	873	ENDOCRINE, NUTRITIONAL & METABOLIC DISEASE EXCEPT DIABETES & OBESITY											
ICD9 CODE	272	Disorders of lipid metabolism	6	9	\$67.45	\$51.15	\$62.67	\$34.11	\$29.73	\$45.91			✓
APG#	886	URINARY TRACT INFECTION											
ICD9 CODE	599.0	Other disorders of urethra and uri	15	11	\$76.90	\$48.40	\$53.32	\$40.74	\$57.16	\$16.39	✓		
APG#	887	RENAL FAILURE											

TOTAL RESOURCE COSTS FOR MEDICAL VISITS, HOSPITALS AND PHYSICIANS' OFFICES

MEDICAL DIAGNOSES	ICD9 CODE	APG & ICD-9 DESCRIPTION	Sample Size		Mean		Median		Standard Deviation		Statistical Significance (90 percent)		
			Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Hospital	Phys. Off.	Higher Hospital Mean	Higher Phys. Off. Mean	No Significant Difference
ICD9 CODE	585	Chronic renal failure	6	4	\$80.54	\$61.45	\$68.17	\$64.61	\$59.73	\$27.96			✓
APG#	888	URINARY DISEASE EXCEPT URINARY TRACT INFECTION & RENAL FAILURE											
ICD9 CODE	599.7	Other disorders of urethra and uri	13	11	\$100.73	\$71.56	\$87.68	\$65.50	\$36.36	\$23.45	✓		
ICD9 CODE	788.2	Symptoms involving urinary tract	8	9	\$84.45	\$42.38	\$85.79	\$39.57	\$23.92	\$10.73	✓		
APG#	901	BENIGN PROSTATIC HYPERTROPHY											
ICD9 CODE	600	Hyperplasia of prostate	7	7	\$56.03	\$36.01	\$49.44	\$37.61	\$25.48	\$11.06	✓		
APG#	902	MALE REPRODUCTIVE DISEASES EXCEPT BENIGN PROSTATIC HYPERTROPHY											
ICD9 CODE	601.9	Inflammatory diseases of prostate	10	10	\$64.53	\$31.53	\$66.24	\$27.41	\$18.09	\$11.10	✓		
APG#	916	FEMALE GYNECOLOGICAL DISEASE											
ICD9 CODE	V72.3	Gynecological examination	12	8	\$77.46	\$42.51	\$59.73	\$42.18	\$49.19	\$6.23	✓		
APG#	932	AIDS RELATED COMPLEX & HIV INFECTION WITH COMPLICATIONS											
ICD9 CODE	043.9	Arc, unspecified	7	3	\$95.94	\$98.18	\$71.09	\$94.80	\$57.23	\$66.69			✓
APG#	933	OTHER IMMUNOLOGIC & HEMATOLOGIC DISEASE											
ICD9 CODE	429	Ill-defined descriptions and compl	9	4	\$113.34	\$79.70	\$71.09	\$63.64	\$65.78	\$61.18			✓
ICD9 CODE	280.9	Iron deficiency anemias - unspeci	7	7	\$93.99	\$41.65	\$78.30	\$33.04	\$42.03	\$25.04	✓		
ICD9 CODE	281.9	Other deficiency anemias - unspe	6	6	\$76.11	\$48.34	\$71.61	\$41.26	\$19.80	\$24.11	✓		
ICD9 CODE	710.0	Diffuse diseases of connective tis	7	7	\$83.54	\$60.40	\$83.84	\$56.61	\$27.60	\$18.38	✓		
APG#	946	ADULT MEDICAL EXAMINATION											
ICD9 CODE	V70.0	Routine general medical examinatio	6	7	\$94.93	\$67.27	\$89.59	\$67.83	\$39.01	\$14.47			✓
APG#	947	WELL CHILD CARE											
ICD9 CODE	V20.2	Routine infant or child health chec	4	6	\$74.74	\$46.01	\$81.77	\$45.95	\$41.40	\$17.37			✓
APG#	949	CONTRACEPTION & PROCREATIVE MANAGEMENT											
ICD9 CODE	V25.09	General counseling and advice; o	5	6	\$65.39	\$29.82	\$62.43	\$26.00	\$11.97	\$13.06	✓		
APG#	950	REPEAT PRESCRIPTION											
ICD9 CODE	V68.1	Issue of repeat prescriptions	7	6	\$28.91	\$29.40	\$28.87	\$27.51	\$12.52	\$12.12			✓
APG#	951	NONSPECIFIC SIGNS & SYMPTOMS & OTHER CONTACTS WITH HEALTH SERVICES											
ICD9 CODE	V67.0	Follow-up examination following st	8	8	\$50.96	\$40.15	\$51.50	\$42.35	\$16.69	\$15.38			✓
ICD9 CODE	V67.2	Follow-up examination following cl	4	4	\$88.28	\$63.09	\$92.32	\$46.00	\$39.01	\$45.93			✓
APG#	976												
ICD9 CODE	V22.2	Normal pregnancy; pregnant state	7	5	\$89.16	\$29.96	\$62.43	\$29.92	\$73.84	\$12.36	✓		
AGGREGATE MEAN FOR ALL MEDICAL VISITS			696	660	\$94.83	\$57.44	\$74.89	\$47.97	\$69.01	\$36.51	✓		

4. DIFFERENCES IN RESOURCE COSTS ACROSS OUTPATIENT SETTINGS

4. DIFFERENCES IN RESOURCE COSTS ACROSS OUTPATIENT SETTINGS

4.1 INTRODUCTION

Data on the costs of outpatient services in different settings were presented in Chapter 3 as part of the discussion of the composition of the resource costs that were measured. In this chapter, comparative data are presented to increase understanding of the differences and similarities of cost structures of different provider types. Ambulatory surgery costs are compared for ten high volume procedures in hospital outpatient departments and ambulatory surgery centers. Reasons for differences in costs, including volume and case-mix variances are investigated. In addition, comparisons are made between hospitals, ASCs and physician offices for a small number of ambulatory surgery procedures. Comparisons of radiology and laboratory costs incurred by hospitals and by physician offices for specific high volume procedures are also compared. Finally, comparisons of the costs of selected medical visits conducted in hospital outpatient departments and physician offices are presented.

In an earlier study conducted for the Office of the Assistant Secretary for Planning and Evaluation (OASPE) of the Department of Health and Human Services, the Center for Health Policy Studies determined that hospital costs for ambulatory surgery were lower, not higher than the costs of ASCs. The OASPE study, however, examined a small number of procedures in a small number of provider settings. This study is examining costs using a more rigorous method for a far larger number of procedures in a larger number of provider settings. This study will attempt to identify causes of differences across settings.

As shown in the data presented in this chapter, the original CHPS finding that hospitals have lower, not higher, costs than ASCs has been not been confirmed. This lack of statistically significant differences in costs across provider types is most probably due to sample size constraints; future efforts that incorporate adequate sample sizes may verify the significance of the apparent differences in costs. The results should be considered indicative of the real differences in costs between hospitals, ASCs and physician practices.

Differences noted in this study, however, are not as great as those previously identified. Costs in physician offices were found to be substantially lower for most procedures than costs identified for other settings. This difference is consistently noted for ambulatory surgery, radiology, laboratory and medical visits. The small, non-random sample of physician offices used in the study substantially limit the significance of these findings. At most, they should be considered suggestive of the direction of differences in physician office costs as compared to other settings.

4.2 COMPARATIVE ANALYSIS OF THE COSTS OF AMBULATORY SURGERY

The direct costs components and total direct costs of ten high volume ambulatory surgery procedures are presented in Exhibits 4-1A through 4-1F. For two of the ten procedures, hospital total direct costs are statistically higher than ASC total direct costs; there was no statistical difference between the costs for the other eight procedures.

It was expected that hospitals would be able to obtain better prices for supplies and pharmaceuticals although there was no pattern of statistical differences for these cost components. Investigations have revealed that lower supply costs arise from differences in patterns of resources used rather than unit costs of resources. Hospitals are able to use volume discounts when purchasing that many ASCs can not obtain. Differences in labor costs follow the pattern of differences in overall direct costs. Hospitals have higher direct labor costs for two of ten procedures, and there was no statistical difference in labor costs for the other eight procedures.

It should be understood that the differences shown for the high volume procedures is similar to the differences found for all procedures. It is also important to note that in only two cases are the differences in direct costs more than ten percent (66984 and 66821). These eye procedures may have had their costs affected by including some eye-only ASCs in the study sample. These ASCs may be able to take advantage of high volumes and concentrated training to reduce costs. All other procedures have similar direct costs for hospitals and ASCs. It is reasonable to conclude that with the exception of eye procedures and the exclusion of ASC facilities that perform only eye procedures, this analysis would have found only limited differences between hospital and ASC direct costs.

There are more significant differences in the indirect labor cost component of ambulatory surgery. As presented in Exhibits 4-2A through 4-2D, indirect labor costs of ambulatory surgery are higher for ASCs than for hospitals for nine of the ten procedures studied; for CPT 45378, there was no statistical difference in costs between ASCs and hospitals. However, hospitals have statistically higher indirect equipment costs for three procedures while ASCs have higher equipment costs for only one procedure. Total indirect costs are statistically different for only one of the procedures examined here; ASCs have higher total indirect costs for performing CPT 49505.

Data on direct and indirect cost for the ten high volume procedures are summarized in Exhibit 4-3A through 4-3C. As shown in these exhibits, there are very few statistical differences in total direct, total indirect or total resource costs between hospitals and ASCs. As noted above, hospitals have higher direct costs for CPT 66984 and CPT 66821; ASCs have higher indirect costs for CPT 49505. Total resource costs differ for only two of the procedures studied here. Hospitals have higher costs for CPT 66821 while ASCs have higher costs for CPT 49505.

Once again, the lack of statistical difference is, in all probability, due to the small sample sizes for these procedures when analyzed by provider type groups.

COMPARISON OF DIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

DIRECT LABOR

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF DIRECT LABOR		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	183.79	113.67	✓		✓
45378	Colonoscopy, diagnostic	27	13	85.74	91.85			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	90.71	100.93			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	146.60	153.69			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	85.55	84.05			✓
43235	Upper GI endoscopy, diagnostic	24	12	79.58	89.04			✓
19120	Excision of cyst	31	23	136.16	119.76			✓
52000	Cystourethroscopy (separate procedure)	26	14	125.85	104.88			✓
45380	Colonoscopy, for biopsy	27	14	95.00	102.16			✓
66821	Discission of secondary membranous cataract	12	12	149.73	76.70	✓		

Source CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

SUPPLIES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF SUPPLIES		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	344.02	306.97			✓
45378	Colonoscopy, diagnostic	27	13	58.05	54.51			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	72.30	67.12			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	98.70	110.89			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	77.34	76.36			✓
43235	Upper GI endoscopy, diagnostic	24	12	76.04	70.06			✓
19120	Excision of cyst	31	23	87.92	89.26			✓
52000	Cystourethroscopy (separate procedure)	26	14	67.35	78.07		✓	
45380	Colonoscopy, for biopsy	27	14	68.42	76.83			✓
66821	Dissection of secondary membranous cataract	12	12	208.36	68.93	✓		

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

MOVABLE EQUIPMENT

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF MOVABLE EQUIPMENT		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	7.82	9.31		✓	✓
45378	Colonoscopy, diagnostic	27	13	11.61	11.49			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	11.17	12.15			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	0.96	0.99			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	10.98	10.35			✓
43235	Upper GI endoscopy, diagnostic	24	12	10.51	10.22			✓
19120	Excision of cyst	31	23	1.41	1.28			✓
52000	Cystourethroscopy (separate procedure)	26	14	7.94	7.55			✓
45380	Colonoscopy, for biopsy	27	14	12.26	10.87			✓
66821	Discission of secondary membranous cataract	12	12	7.66	8.20			✓

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

PHARMACEUTICALS

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF PHARMACEUTICALS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	82.45	99.66			✓
45378	Colonoscopy, diagnostic	27	13	17.41	9.50			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	19.72	15.68			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	9.68	11.82			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	26.38	13.26	✓		
43235	Upper GI endoscopy, diagnostic	24	12	17.69	14.02			✓
19120	Excision of cyst	31	23	9.01	7.30			✓
52000	Cystourethroscopy (separate procedure)	26	14	6.45	11.48		✓	
45380	Colonoscopy, for biopsy	27	14	19.45	16.02			✓
66821	Discision of secondary membranous cataract	12	12	70.24	57.49			✓

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

ANESTHETICS

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF ANESTHETICS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	23.49	16.93	✓		✓
45378	Colonoscopy, diagnostic	27	13	12.80	11.32			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	15.74	16.52			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	73.52	69.14			✓
	Upper GI endoscopy, for biopsy or collection of specimen	27	13	14.49	19.05			✓
43239		24	12	11.63	20.03			✓
43235	Upper GI endoscopy, diagnostic	31	23	40.34	44.97			✓
19120	Excision of cyst	26	14	54.25	54.26			✓
52000	Cystourethroscopy (separate procedure)	27	14	14.26	14.27			✓
45380	Colonoscopy, for biopsy	12	12	20.60	9.92	✓		
66821	Dissection of secondary membranous cataract							

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

TOTAL DIRECT COSTS

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL DIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	641.57	548.54	✓		✓
45378	Colonoscopy, diagnostic	27	13	185.61	178.69			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	209.65	212.40			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	329.46	346.53			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	214.74	203.06			✓
43235	Upper GI endoscopy, diagnostic	24	12	195.44	203.37			✓
19120	Excision of cyst	31	23	274.84	262.57			✓
52000	Cystourethroscopy (separate procedure)	26	14	261.84	256.23			✓
45380	Colonoscopy, for biopsy	27	14	209.39	220.15			✓
66821	Discision of secondary membranous cataract	12	12	456.59	221.24	✓		

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

INDIRECT LABOR

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF INDIRECT LABOR		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
56984	Extracapsular cataract removal with insertion of intraocular lens	22	23	27.54	78.62		✓	✓
45378	Colonoscopy, diagnostic	27	13	18.05	48.74			
45385	Colonoscopy, for removal of polypoid lesion	25	15	17.22	61.16		✓	
49505	Repair of inguinal hernia, age 5 or over	27	20	28.23	101.12		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	15.03	45.24		✓	
43235	Upper GI endoscopy, diagnostic	24	12	12.03	41.58		✓	
19120	Excision of cyst	31	23	27.44	90.53		✓	
52000	Cystourethroscopy (separate procedure)	26	14	18.46	49.64		✓	
45380	Colonoscopy, for biopsy	27	14	20.74	58.85		✓	
66821	Discission of secondary membranous cataract	12	12	16.50	39.99		✓	

Source CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

EQUIPMENT

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN COST OF EQUIPMENT		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	54.65	41.04	✓		✓
45378	Colonoscopy, diagnostic	27	13	33.58	27.30			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	41.68	35.92			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	43.74	56.01		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	26.40	27.42			✓
43235	Upper GI endoscopy, diagnostic	24	12	23.43	23.12			✓
19120	Excision of cyst	31	23	46.09	41.97	✓		
52000	Cystourethroscopy (separate procedure)	26	14	25.28	23.07			✓
45380	Colonoscopy, for biopsy	27	14	40.67	33.71			✓
66821	Excision of secondary membranous cataract	12	11	36.10	25.63	✓		

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

OVERHEAD

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN OVERHEAD COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	223.76	267.67			✓
45378	Colonoscopy, diagnostic	27	13	108.17	131.34			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	112.48	185.29			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	170.48	263.53		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	87.37	115.16			✓
43235	Upper GI endoscopy, diagnostic	24	12	70.51	123.33			✓
19120	Excision of cyst	31	23	194.19	217.99			✓
52000	Cystourethroscopy (separate procedure)	26	14	119.01	136.91			✓
45380	Colonoscopy, for biopsy	27	14	119.08	151.67			✓
66821	Discussion of secondary membranous cataract	12	12	157.39	100.04			✓

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

TOTAL INDIRECT COSTS

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL INDIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	305.95	387.33			✓
45378	Colonoscopy, diagnostic	25	13	172.59	207.39			✓
45385	Colonoscopy, for removal of polypoid lesion	23	15	186.28	282.38			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	242.45	420.65		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	25	13	139.11	187.83			✓
43235	Upper GI endoscopy, diagnostic	22	12	115.61	188.03			✓
19120	Excision of cyst	31	23	267.72	350.48			✓
52000	Cystourethroscopy (separate procedure)	26	14	162.75	209.61			✓
45380	Colonoscopy, for biopsy	25	14	194.93	244.23			✓
66821	Discission of secondary membranous cataract	12	12	209.99	163.47			✓

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF TOTAL DIRECT RESOURCE COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL DIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	641.57	548.54	✓		✓
45378	Colonoscopy, diagnostic	27	13	185.61	178.69			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	209.65	212.40			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	329.46	346.53			✓
	Upper GI endoscopy, for biopsy or collection of specimen	27	13	214.74	203.06			✓
43239		24	12	195.44	203.37			✓
43235	Upper GI endoscopy, diagnostic	31	23	274.84	262.57			✓
19120	Excision of cyst	26	14	261.84	256.23			✓
52000	Cystourethroscopy (separate procedure)	27	14	209.39	220.15			✓
45380	Colonoscopy, for biopsy	12	12	456.59	221.24	✓		
66821	Dissection of secondary membranous cataract							

Source: CHPS Outpatient Resource Costing Data Base

**COMPARISON OF TOTAL INDIRECT RESOURCE COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL INDIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	305.95	387.33			✓
45378	Colonoscopy, diagnostic	25	13	172.59	207.39			✓
45385	Colonoscopy, for removal of polypoid lesion	23	15	186.28	282.38			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	242.45	420.65		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	25	13	139.11	187.83			✓
43235	Upper GI endoscopy, diagnostic	22	12	115.61	188.03			✓
19120	Excision of cyst	31	23	267.72	350.48			✓
52000	Cystourethroscopy (separate procedure)	26	14	162.75	209.61			✓
45380	Colonoscopy, for biopsy	25	14	194.93	244.23			✓
66821	Dissection of secondary membranous cataract	12	12	209.99	163.47			✓

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF TOTAL RESOURCE COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	ASC	HOSPITAL	ASC	HIGHER HOSPITAL MEAN COST	HIGHER ASC MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	22	23	947.52	935.87			✓
45378	Colonoscopy, diagnostic	27	13	345.41	386.07			✓
45385	Colonoscopy, for removal of polypoid lesion	25	15	381.03	494.77			✓
49505	Repair of inguinal hernia, age 5 or over	27	20	571.91	767.19		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	27	13	343.54	390.89			✓
43235	Upper GI endoscopy, diagnostic	24	12	301.42	391.40			✓
19120	Excision of cyst	31	23	542.56	613.05			✓
52000	Cystourethroscopy (separate procedure)	26	14	424.59	465.85			✓
45380	Colonoscopy, for biopsy	27	14	389.89	464.39			✓
66821	Dissection of secondary membranous cataract	12	12	666.58	384.71	✓		

Source: CHPS Outpatient Resource Costing Data Base

Prior to reviewing data, two hypotheses were developed to account for different costs in hospitals than in ASCs. First, it was considered possible that there were substantial differences in case-mix between hospitals and ASCs, with ASCs having lower direct costs because their case load included less complex patients. Second, it was hypothesized that higher volumes in hospitals resulted in allocation of indirect costs that produced lower costs. Both of these hypotheses were investigated.

The investigation of case-mix was completed by developing ambulatory surgery case-mix indices for each facility included in the study. Resource costs were used to establish a value for each APG and relative weights for APGs based on resource costs were calculated. The volumes of procedures in each APG for each facility were used to calculate case-mix indices. An average case-mix index for all hospitals and all ASCs was calculated. Hospitals had a slightly higher case-mix index (1.02) than ASCs (.97). The method used to calculate case-mix was limited to procedures performed by participating facilities for which data were available. As a result, truly comprehensive case-mix indices were not calculated. Furthermore, the difference that is noted is not statistically significant. Although the data clearly indicate little difference in case-mix between hospital OPDs and ASCs, additional research is needed to fully document any differences in case-mix that may exist. Additional research on case-mix in physician offices is also useful. The small number of surgical procedures performed in physician offices that were included in this study did not provide an opportunity to measure physician office case-mix. It appears likely, however, that differences in case-mix account for no more than a small portion of the difference in direct costs that was found. Differences in patient severity are more likely to have an effect on direct cost. If surgeons select hospitals as the surgical sites for patients who represent higher risks, the case-mix index will not measure the actual impact of this action. For example, a surgeon may repair an inguinal hernia on a healthy 25 year old patient in an ASC, but use a hospital to repair a hernia for a 60 year old patient with diabetes. These differences are not measured in the case-mix index, but are believed to account for higher direct costs in hospitals.

Although it was difficult to discern the impact of case-mix on direct costs, it is clear that differences in volume accounted for much of the difference in indirect cost. Hospitals can allocate portions of the cost of their equipment and overhead to inpatient as well as outpatient surgical procedures and, furthermore, most hospitals in the study had higher volumes than most ASCs. Both hospitals and ASCs with fewer than 1,000 ambulatory surgery procedures annually were excluded from the study. The average annual volume of ambulatory surgery procedures performed in hospitals included in the study was 5,265 while the average annual volume of ambulatory surgery procedures performed in ASCs included in the study was 2,989. As noted in Chapter 3, the impact of volume on indirect costs is significant and is primarily responsible for higher indirect costs in ASCs when compared to indirect costs in hospitals.

An additional analysis of the costs of ambulatory surgery performed in physician offices was completed. This analysis was limited to a small number of simple procedures in order to identify procedures that were performed in all three settings i.e., hospitals, ASCs and physician offices. The analysis is presented in Exhibits 4-4A through 4-4C. In all cases, the physician offices were the least costly site for the performance of the procedure. As noted in Chapter 2, the

COMPARISON OF DIRECT COSTS OF SELECTED PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE			MEAN TOTAL DIRECT COSTS			STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL
		HOSPITAL	ASC	PHYSICIAN OFFICE	HOSPITAL	ASC	PHYSICIAN OFFICE	DIFFERENCE IN MEAN COSTS
11401	Excision, including simple closure, including anesthesia (0.6 to 1.0 cm)	24	13	6	207.02	228.44	60.25	Hospitals and ASCs have higher mean costs than physician offices, but their mean costs do not differ significantly from each other.
12001	Simple repair of superficial wounds (2.5 cm or less)	21	6	6	188.42	221.93	43.19	Hospitals and ASCs have higher mean costs than physician offices, but their mean costs do not differ significantly from each other.
45330	Sigmoidoscopy (diagnostic)	25	13	6	113.77	155.47	41.70	ASCs have a higher mean cost than both hospitals and physician offices; hospitals also have a higher mean cost than physician offices.

Note. Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE			MEAN TOTAL INDIRECT COSTS			STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL
		HOSPITAL	ASC	PHYSICIAN OFFICE	HOSPITAL	ASC	PHYSICIAN OFFICE	DIFFERENCE IN MEAN COSTS
11401	Excision, including simple closure, including anesthesia (0.6 to 1.0 cm)	24	13	6	157.37	216.89	48.82	Hospitals and ASCs have higher mean costs than physician offices, but their mean costs do not differ significantly from each other.
12001	Simple repair of superficial wounds (2.5 cm or less)	21	6	6	144.09	223.90	33.54	ASCs have a higher mean cost than both hospitals and physician offices; hospitals also have a higher mean cost than physician offices.
45330	Sigmoidoscopy (diagnostic)	23	13	6	115.54	174.86	38.92	ASCs have a higher mean cost than both hospitals and physician offices; hospitals also have a higher mean cost than physician offices.

Note Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.

Source CHPS Outpatient Resource Costing Data Base

COMPARISON OF TOTAL COSTS OF SELECTED PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE			MEAN TOTAL COSTS			STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL
		HOSPITAL	ASC	PHYSICIAN OFFICE	HOSPITAL	ASC	PHYSICIAN OFFICE	DIFFERENCE IN MEAN COSTS
11401	Excision, including simple closure, including anesthesia (0.6 to 1.0 cm)	24	13	6	364.38	445.33	109.07	ASCs have a higher mean cost than both hospitals and physician offices; hospitals also have a higher mean cost than physician offices.
12001	Simple repair of superficial wounds (2.5 cm or less)	21	6	6	332.51	445.84	76.73	ASCs have a higher mean cost than both hospitals and physician offices; hospitals also have a higher mean cost than physician offices.
45330	Sigmoidoscopy (diagnostic)	25	13	6	220.07	330.32	80.62	ASCs have a higher mean cost than both hospitals and physician offices; hospitals also have a higher mean cost than physician offices.

Note Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.

Source CHPS Outpatient Resource Costing Data Base

study of physician offices was exploratory and was not intended to provide definitive data on the costs of physician practices.

The substantially lower costs of procedures in physician offices may occur for several reasons. Since physicians do not receive a facility fee when they perform surgery in their office, they may not create a structure for performing procedures that require substantial expenditures. In addition, physicians treat only the simplest cases in their offices. Frequently, if there is any concern that a patient may need more extensive facilities, procedures are performed in hospitals or ASCs. Although data are unavailable, it is reasonable to expect that patients for whom surgery is performed in an office setting are lower risk patients than those whose surgery is performed in a hospital or ASC.

There are other more specific reasons why physician office costs may be lower for the procedures listed in the exhibit. In hospitals and ASCs, procedures (except some scope procedures) typically require the presence of two staff members in the operating room, including an RN and an operating room technician. In addition, all patients receive attention in the recovery room, regardless of the nature of their surgery. In physician offices, the surgeon is usually assisted by only one staff member and it is unlikely that there is a formal recovery room. As a result, substantially less direct labor is likely to be used in physician offices when compared to a hospital or ASC. In addition, physicians usually do not make the investments in indirect equipment or labor that increases the indirect costs of hospitals and ASCs. Although these factors contribute to the lower costs of procedures performed in physician offices, additional differences are also likely to exist. More definitive analysis is required, especially analysis that is based on a larger sample of physician offices.

4.3 COMPARATIVE ANALYSIS OF THE COST OF RADIOLOGY PROCEDURES

Costs for eight high volume radiology procedures are presented in Exhibits 4-5A through 4-5C. Although average costs are lower in physician offices, the differences in costs are far less than in the case of ambulatory surgery, and are in no cases statistically significant. The limited sample size available for this analysis probably accounts for the lack of statistical differences.

4.4 COMPARATIVE ANALYSIS OF THE COST OF LABORATORY PROCEDURES

Costs for six laboratory procedures are presented in Exhibits 4-6A through 4-6C. The six procedures were selected from among a small number of procedures for which adequate data were collected in physician offices. In four of the six cases, costs of procedures in physician offices were lower than in the hospital setting; however, the difference was not significant. Lower costs are expected in physician offices since physician investment in equipment is substantially lower and less complex equipment is typically purchased by physicians. Equipment cost is the largest component of direct cost for most laboratory procedures. Indirect laboratory costs are lower in physician offices for the same reasons that they are lower for other types of

COMPARISON OF DIRECT COSTS OF SELECTED RADIOLOGY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL DIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
70551	Magnetic resonance imaging	12	2	201.32	166.66			✓
70470	Computerized axial tomography	20	3	165.70	125.61			✓
76091	Mammography, bilateral	18	7	26.51	25.25			✓
71010	Radiologic examination, chest, single view	23	7	17.66	19.92			✓
73510	Radiologic examination, hip, complete	22	10	21.65	22.08			✓
74240	Radiologic examination, gastrointestinal tract, upper	17	5	55.67	59.35			✓
73041	Radiologic examination, shoulder, arthrography	17	5	88.30	66.52			✓
78306	Bone imaging, whole body	17	3	129.83	138.00			✓

Notes:

- 1 Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- 2 The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED RADIOLOGY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL INDIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
70551	Magnetic resonance imaging	11	2	147.67	135.64			✓
70470	Computerized axial tomography	19	3	66.22	55.06			✓
76091	Mammography, bilateral	17	7	40.13	31.37			✓
71010	Radiologic examination, chest, single view	22	7	10.88	6.94			✓
73510	Radiologic examination, hip, complete	21	9	23.43	17.95			✓
74240	Radiologic examination, gastrointestinal tract, upper	17	5	40.01	44.62			✓
73041	Radiologic examination, shoulder, arthrography	16	5	59.67	47.25			✓
78306	Bone imaging, whole body	17	3	121.01	157.86			✓

Notes.

- 1 Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- 2 The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF TOTAL COSTS OF SELECTED RADIOLOGY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
70551	Magnetic resonance imaging	12	2	336.68	302.00			✓
70470	Computerized axial tomography	20	3	228.61	180.67			✓
76091	Mammography, bilateral	18	7	64.41	56.62			✓
71010	Radiologic examination, chest, single view	23	7	28.07	26.86			✓
73510	Radiologic examination, hip, complete	22	10	44.02	38.23			✓
74240	Radiologic examination, gastrointestinal tract, upper	17	5	95.68	103.96			✓
73041	Radiologic examination, shoulder, arthrography	17	5	144.46	113.77			✓
78306	Bone imaging, whole body	17	3	250.83	295.86			✓

Notes.

- 1 Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- 2 The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF DIRECT COSTS OF SELECTED LABORATORY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL DIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
86430	Rheumatoid factor, qualitative	19	6	6.39	24.13			✓
82947	Glucose except urine	21	7	7.47	7.02			✓
84478	Triglycerides, blood	21	6	7.25	6.20			✓
82270	Blood occult, feces screening	19	6	3.65	2.19			✓
94700	Analysis of arterial blood gas	14	2	15.04	10.29			✓
81002	Urinalysis, routine	16	4	4.04	4.79			✓

Notes:

- 1 Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- 2 The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices.

Source CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED LABORATORY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL INDIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
86430	Rheumatoid factor, qualitative	6	2	22.58	25.33			✓
82947	Glucose except urine	6	2	13.15	6.33			✓
84478	Triglycerides, blood	6	2	17.09	6.33			✓
82270	Blood occult, feces screening	5	3	9.61	8.09			✓
94700	Analysis of arterial blood gas	11	2	40.53	29.79			✓
81002	Urinalysis, routine	4	2	6.30	4.14			✓

Notes

- 1 Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
- 2 The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of both hospitals and physician offices.
- 3 Few hospital records for laboratory procedures contained values for indirect costs; the records that did contain indirect costs are located in the upper half of the cost distribution. Therefore, the resulting mean estimates are not representative of the entire distribution, and may be greater in value than the mean estimate for total cost for this procedure.

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF TOTAL COSTS OF SELECTED LABORATORY PROCEDURES

CPT CODE	PROCEDURE	SAMPLE SIZE		MEAN TOTAL COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL	PHYSICIAN OFFICE	HOSPITAL	PHYSICIAN OFFICE	HIGHER HOSPITAL MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
85430	Rheumatoid factor, qualitative	19	6	13.52	32.57			✓
82947	Glucose except urine	21	7	11.23	8.83			✓
84478	Triglycerides, blood	21	6	12.13	8.31			✓
82270	Blood occult, feces screening	19	7	6.18	5.35			✓
94700	Analysis of arterial blood gas	14	2	46.89	40.08			✓
81002	Urinalysis, routine	16	4	5.62	6.86			✓

Notes:

1. Only a small sample of physician offices was included in this study. Physician office data is presented for comparison purposes only.
2. The absence of statistically significant differences in mean costs is due in part to the very small sample sizes of physician offices.

Source: CHPS Outpatient Resource Costing Data Base

procedures. Physicians do not invest in labor, indirect equipment or overhead in the same way that hospitals invest in these resources.

One of the procedures for which the hospital is the lower cost setting is analysis of arterial blood gases. Direct costs for this procedure are lower in the physician office setting, but indirect costs are substantially higher. Arterial blood gas analysis is a procedure that is not performed in many physician offices. Most small group practices would not generate the volume required to justify ownership of the equipment needed for the procedure. Only a small number of the practices included in this study provided arterial blood gas analysis and the unique mix of these practices created the high indirect cost shown in the exhibit.

4.5 COMPARATIVE ANALYSIS OF THE COST OF MEDICAL VISITS

Exhibits 4-7A through 4-7C identify ten medical visits and their costs in hospital outpatient departments and in physician offices. Data for both settings excludes costs of physician services. For four of the ten visits, total costs are higher in the hospital outpatient department than in the physician office; there are no statistical differences for the other six procedures. In three of the four cases, three of which appear in the list of statistically higher total costs, direct costs are lower in the physician office setting. In two cases, indirect costs are lower in the physician office settings than in the hospital OPD. This finding is consistent with other analyses of physician office cost where indirect costs were found to be consistently lower in offices than in OPDs.

It should also be noted that indirect costs are a larger percentage of total costs for medical visits than for ambulatory surgery, radiology or laboratory procedures. On average, indirect costs account for three-fourths of total medical visit cost in both settings.

4.6 CONCLUSION

Data collected in this study suggests that ambulatory surgery costs are higher in ASCs than in hospitals. Little difference was found in direct costs of ambulatory surgery across the two settings, but some difference was found in indirect cost. Most of this difference arose from lower ASC volumes. Our sample excludes facilities with fewer than 1,000 procedures per year. If small ASCs were included in the sample, average ASC indirect costs could be higher than we found in our sample.

For all other procedures where there was a statistically significant difference in costs, the physician's office was found to be a lower cost setting for the same procedures than hospital outpatient departments. This finding was consistent for radiology procedures, laboratory procedures and medical visits.

COMPARISON OF DIRECT COSTS OF SELECTED MEDICAL VISITS

APG/ICD-9 CODE	DESCRIPTION	SAMPLE SIZE		MEAN TOTAL DIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL OPD	PHYSICIAN OFFICE	HOSPITAL OPD	PHYSICIAN OFFICE	HIGHER HOSPITAL OPD MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
APG 947	Well child care	4	6	16.40	6.44			✓
APG 946	Adult medical examination	6	6	11.78	6.77			✓
ICD 599	Urinary tract infection	15	11	15.41	9.24			✓
ICD 250.0	Diabetes	8	9	15.03	14.36			✓
ICD 707.1	Chronic skin ulcer	9	6	16.62	9.43	✓		
ICD 535.5	Ulcers, gastritis, and esophagitis	10	10	14.97	12.39			✓
ICD 401.9	Hypertension	9	12	19.81	8.26	✓		
ICD 786.09	Respiratory disease except emphysema, chronic bronchitis, and asthma	9	6	15.98	4.36	✓		
ICD 366.9	Cataracts	3	5	11.82	6.95			✓
ICD 784.0	Headache	10	7	14.32	6.42	✓		

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF INDIRECT COSTS OF SELECTED MEDICAL VISITS

APG/ICD-9 CODE	DESCRIPTION	SAMPLE SIZE		MEAN TOTAL INDIRECT COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL OPD	PHYSICIAN OFFICE	HOSPITAL OPD	PHYSICIAN OFFICE	HIGHER HOSPITAL OPD MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
APG 947	Well child care	4	6	58.34	39.57			✓
APG 946	Adult medical examination	6	7	83.15	61.48			✓
ICD 599	Urinary tract infection	15	11	61.49	39.16	✓		
ICD 250.0	Diabetes	8	9	65.24	46.67			✓
ICD 707.1	Chronic skin ulcer	9	6	64.36	43.20			✓
ICD 535.5	Ulcers, gastritis, and esophagitis	10	10	77.03	53.10			✓
ICD 401.9	Hypertension	9	12	82.29	72.90			✓
ICD 786.09	Respiratory disease except emphysema, chronic bronchitis, and asthma	9	6	90.90	51.62			✓
ICD 366.9	Cataracts	3	5	58.62	69.32			✓
ICD 784.0	Headache	10	10	72.82	32.71	✓		

Source: CHPS Outpatient Resource Costing Data Base

COMPARISON OF TOTAL COSTS OF SELECTED MEDICAL VISITS

APG/ICD-9 CODE	DESCRIPTION	SAMPLE SIZE		MEAN TOTAL COSTS		STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
		HOSPITAL OPD	PHYSICIAN OFFICE	HOSPITAL OPD	PHYSICIAN OFFICE	HIGHER HOSPITAL OPD MEAN COST	HIGHER PHYSICIAN OFFICE MEAN COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
APG 947	Well child care	4	6	74.74	46.01			✓
APG 946	Adult medical examination	6	7	94.93	67.27			✓
ICD 599	Urinary tract infection	15	11	76.90	48.40	✓		
ICD 250.0	Diabetes	8	9	80.27	61.02			✓
ICD 707.1	Chronic skin ulcer	9	6	80.98	52.63	✓		
ICD 535.5	Ulcers, gastritis, and esophagitis	10	10	92.00	65.49			✓
ICD 401.9	Hypertension	9	12	102.09	81.17			✓
ICD 786.09	Respiratory disease except emphysema, chronic bronchitis, and asthma	9	6	106.88	55.98	✓		
ICD 366.9	Cataracts	3	5	70.44	76.27			✓
ICD 784.0	Headache	10	10	87.13	37.20	✓		

Source: CHPS Outpatient Resource Costing Data Base

5. COSTS OF PROCEDURE COMBINATIONS

5. COSTS OF PROCEDURE COMBINATIONS

5.1 INTRODUCTION

The purpose of this chapter is to use outpatient resource costing data to initiate a study of the marginal costs of conducting procedures when more than one procedure is completed during a visit. It must be understood that a comprehensive effort to measure marginal cost was not completed during this study. Such an effort requires the development of resource profiles for procedure combinations and their empirical validation. It is possible, however, to examine resource profiles for two individual procedures that may be performed during a single visit. Once resource requirements for combinations are identified, their pricing can be completed using unit costs from the resource costing data base. The analysis that is produced should be considered as a preliminary effort to identify marginal costs of performing more than one procedure during a visit. Additional efforts to study this issue are required.

Three ambulatory surgery procedure combinations and one radiology procedure combination are studied in the chapter. The combinations have been selected by HCFA staff after reviewing procedure volume included in the database used by 3M in the development of the APG classification system. The resource profiles for each procedure were reviewed to identify the costs that were not duplicated. In the simplest sense, costs for second procedures could be calculated by considering only direct costs and assuming that additional indirect costs would not be incurred. Since indirect costs, however, are allocated using operating room time, it is necessary to evaluate whether performance of a second procedure increases time requirements and, therefore, requires additional indirect costs to be absorbed. Although it is likely that some indirect costs, such as billing and medical records, do not increase when additional operating room time is required, they are assumed to increase in this analysis because they are part of the indirect cost (overhead) that is based on time. This limitation should be considered in reviewing the findings presented in this chapter. In addition, certain direct costs may not be incurred when the second procedure is performed. For example, additional operating room staff are not likely to be required, although staff used for the first procedure may be required to spend additional time in the operating room. In order to fully understand the possible level of marginal costs, resource profiles for the procedure combinations selected are studied in depth.

5.2 IDENTIFICATION OF KEY PROCEDURE COMBINATIONS

As noted, the highest volume procedure combinations were selected for study. The study's procedure sample, however, was selected by examining volume for individual procedures. Some procedure combinations that have high volumes include an individual procedure for which volume was not sufficiently high to be included in the study sample. As a result, the combinations studied include only those where procedure volume was sufficiently high to be included in the study's original sample.

The three ambulatory surgery procedure combinations studied are:

- 66984 - Cataract removal by extracapsular surgery and intraocular lens implantation and 66170 - trabeculectomy,
- 64721 - Decompression of carpal tunnel (multiple procedure), and
- 52601 - Transurethral resection of prostate (TURP) and 54520 - simple bilateral orchiectomy (including subcapsular), with or without testicular prosthesis, scrotal or inguinal approach.

The radiology procedure combination is 71020 - Radiological examination, chest, two views, frontal and lateral and 76091 - mammography, bilateral. Resource profiles for each of the procedures identified in the combinations listed are presented as Exhibits 5-1 through 5-7. *The resource profiles used are not average profiles.* Instead, they are profiles for the specific facilities in which both procedures in the combination were performed. Selection of specific facilities enhances consistency in the data and allows the findings to focus on percent difference between the cost when the two procedures in the combination are performed separately and when they are performed during the same visit.

5.3 COSTS OF KEY PROCEDURE COMBINATIONS - AMBULATORY SURGERY IN HOSPITALS AND AMBULATORY SURGICAL CENTERS

Exhibits 5-1 and 5-2 are the resource profiles for the first combination of procedures (66984 and 66170). These two eye procedures have a cost of \$880.07 and \$571.74 respectively (a combined total of \$1451.81) when performed separately. Examination of the resource profiles identifies potential areas of cost duplication when the procedures are performed as part of a single visit.

Direct labor costs can be substantially reduced when the two procedures are combined. Since 66170 requires more preoperative time, it is likely that no additional preoperative time beyond the 50 minutes spent by the Registered Nurse is required to prepare the patient for surgery. While each procedure requires 60 minutes of operating room time, it is unlikely that both procedures, when combined, would require 120 minutes. Time required to set up the procedure which is estimated at 15 minutes, would not need to be duplicated. For purposes of this analysis, the combined time is assumed to be 105 minutes (120 minutes less 15 minutes); this estimate allows for some increase in the time needed for the jointly performed procedures. The second procedure (66170) requires a longer recovery period and the recovery time for 66984 is subsumed by that period. As a result, the total recovery room nursing time need only be 65 minutes. This review results in 220 minutes of R.N. time and 105 minutes of technician time for the combined procedures. The cost of this time is \$182.73, rather than the \$345.26 required when the two procedures are performed separately.

Review of disposable supplies indicates that most supplies required for 66170 are duplicated for 66984. The only disposable supplies required for 66984 not required for 66170 are:

EXHIBIT 5-1

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Labor minutes by operating phase	Prel	Pre2	OR	Pst1	Pst2	Cost/Minute	Total Cost
Anesthesiologist.....	0	10	60	0	0	0.00000	0.00
PATIENT.....	0	60	60	0	60	0.00000	0.00
Physician.....	0	0	60	0	0	0.00000	0.00
Registered Nurse (RN).....	0	20	60	0	30	0.61000	80.54
Technician.....	0	0	60	0	0	0.35000	25.42

Total Direct Labor: 105.96

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
catheter-20 gauge IV Jelco.....	1	0.86000	0.86
EKG electrodes.....	6	0.23000	1.38
eye pack.....	1	68.41000	68.41
eye shield.....	1	1.18000	1.18
gauze 4x4 sterile.....	1 pkg of 10	0.86000	0.86
gloves-non sterile.....	6 pair	0.08000	0.48
gloves-surgical sterile.....	2 pair	0.39000	0.78
gown-surgical sterile.....	2	2.94000	5.88
head cover.....	5	0.10000	0.50
intraocular lens (IOL).....	1	150.00000	150.00
IV start kit.....	1	2.82629	2.83
mask-surgical.....	4	0.10000	0.40
needle.....	3	0.05000	0.15
oxygen nasal cannula.....	1	0.35000	0.35
patient belongings bag.....	1	0.08000	0.08
shoe covers.....	4 pair	0.10000	0.40
sunglasses.....	1	4.00000	4.00
syringe-10cc.....	1	0.10000	0.10
thermometer probe cover.....	2	0.02000	0.04
tubing-BSS administration.....	1	1.25000	1.25
tubing-I/A.....	1	95.00000	95.00
tubing-IV.....	1	0.65000	0.65
wetfield eraser.....	1	6.20000	6.20

Total Disposable Supplies: 341.77

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
anesthesia tray.....	1	500.00000	1000	0.50
basin set.....	1	20.00000	500	0.04
blood pressure cuff.....	1	187.00000	5000	0.04
cataract tray.....	1	3596.00000	3000	1.20
cautery cord.....	1	720.00000	1000	0.72
eye pack-linen.....	1	15.00000	100	0.15
gown-linen.....	1	9.00000	100	0.09
stethoscope.....	1	44.50000	3000	0.01
temperature monitor-electronic.....	1	400.00000	3000	0.13
towel pack.....	1	10.00000	100	0.10

EXHIBIT 5-1 (CONT.)

Procedure: Extracapsular cataract removal with insertion of intraocular lens prosthesis

CPT: 66984

ICD: 13.41

APG: 291

Total Reusable Supplies: 2.98

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
I/A handpiece.....	1	948	1000	0.948000	0.95
microscope-surgery.....	1	7375	5000	1.475000	1.48
ocusystem.....	1	0	0	0.000000	0.00
phaco machine.....	1	59000	10000	5.900000	5.90
surgical stretcher.....	1	5967	5000	1.193400	1.19
wetfield cautery machine.....	1	4696	5000	0.939200	0.94

Total Movable Equipment: 10.45

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Acetylcholine/Miochol.....	2.00 cc	8.05500	16.11
Alcohol/.....	1.00	0.25000	0.25
BSS (500cc)/.....	500.00 cc	0.01002	5.01
Gentamycin/Garamycin.....	80.00 mg	0.01640	1.31
Methylprednisolone/Solu-Medrol.....	40.00 mg	0.08750	3.50
Povidone iodine/Betadine.....	1.00	0.79000	0.79
Sodium Hyaluronate/Healon 0.55%.....	1.00	59.01000	59.01
Vancomycin/Vancocin.....	500.00 mg	0.02860	14.30

Total Pharmaceuticals: 100.28

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Epinephrine/Adrenalin 1:1000.....	1.00 cc	0.21000	0.21
Tetracaine opthalmic/.....	1.00 cc	1.16000	1.16

Total Anesthetics: 1.37

Total Direct Cost: 562.83 Indirect Labor Cost: 6.28

Total Indirect Cost: 371.20 Indirect Equipment Cost: 45.60

Overhead: 319.31

Total Cost of Procedure: 934.03

EXHIBIT 5-2

Procedure: Fistulization of sclera for glaucoma trabeculectomy ab externo

CPT: 66170

ICD: 12.64

APG: 293

Labor minutes by operating phase	Prel	Pre2	OR	Post1	Post2	Cost/Minute	Total Cost
Anesthesiologist.....	10	10	60	0	0	0.00000	0.00
PATIENT.....	20	20	60	55	10	0.00000	0.00
Physician.....	0	5	60	0	0	0.00000	0.00
Registered Nurse (RN).....	20	30	60	55	10	0.62000	134.37
Technician.....	0	0	60	0	0	0.32000	24.08

Total Direct Labor: 158.45

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
alcohol wipe.....	4	0.00779	0.03
anesthesia circuit.....	1	2.50000	2.50
catheter-20 gauge IV Jelco.....	1	0.86000	0.86
cotton tip applicator.....	6	0.03000	0.18
EKG electrodes.....	3	0.23000	0.69
emesis basin.....	1	0.10400	0.10
eye pack.....	1	61.75000	61.75
gauze 4x4 sterile.....	1 pkg of 10	0.59000	0.59
gloves-non sterile.....	4 pair	0.08000	0.32
gloves-surgical sterile.....	2 pair	0.39000	0.78
gown.....	2	2.88000	5.76
head cover.....	5	0.10000	0.50
IV start kit.....	1	2.82629	2.83
mask-surgical.....	5	0.10000	0.50
medicine cup.....	3	0.00810	0.02
needle-20 gauge Jelco.....	1	1.36000	1.36
oxygen nasal cannula.....	1	0.35000	0.35
patient belongings bag.....	1	0.05000	0.05
scrub brush & soap.....	4	0.30000	1.20
shoe covers.....	5 pair	0.10000	0.50
suction cannister.....	1	1.60000	1.60
suction liner.....	1	1.22000	1.22
suction tip.....	1	2.05300	2.05
suture-nylon 10-0.....	1	19.00000	19.00
suture-silk 6-0.....	1	0.50000	0.50
suture-vicryl 8-0.....	1	2.00000	2.00
syringe-5cc.....	1	0.13000	0.13
tape-1" paper.....	1 roll	0.71000	0.71
thermometer probe cover.....	2	0.02000	0.04
tubing-CO2.....	1	4.00000	4.00
tubing-IV.....	1	2.77000	2.77
tubing-oxygen.....	1	0.61000	0.61
tubing-suction.....	1	2.17000	2.17

Total Disposable Supplies: 117.67

EXHIBIT 5-2 (CONT.)

Procedure: Fistulization of sclera for glaucoma trabeculectomy ab externo

CPT: 66170

ICD: 12.64

APG: 293

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
blood pressure cuff.....	1	187.00000	5000	0.04
eye instrument set.....	1	3304.00000	3000	1.10
phaco tip.....	1	30.00000	100	0.30
phaco wire lid speculum.....	1	20.00000	100	0.20
stethoscope.....	1	44.50000	3000	0.01
temperature monitor-electronic.....	1	400.00000	3000	0.13

Total Reusable Supplies: 1.78

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
microscope-Zeiss.....	1	19327	10000	1.932700	1.93
phaco machine.....	1	45382	10000	4.538200	4.54
television monitor.....	1	1484	5000	0.296800	0.30
wetfield cautery machine.....	1	4696	5000	0.939200	0.94

Total Movable Equipment: 7.70

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
BSS (15cc)/.....	1.00	0.20000	0.20
BSS (500cc)/.....	1.00	0.01500	0.02
Dexamethasone ointment/Decadron.....	1.00	6.12000	6.12
Dexamethasone/Decadron.....	1.00	4.97000	4.97
Epinephrine/Adrenalin 1:1000.....	1.00	0.38000	0.38
Gentamycin/Garamycin.....	1.00	1.61900	1.62
Lactated Ringers/.....	1000.00 ml	0.00089	0.89
Normal saline/.....	250.00	0.00124	0.31
Sodium Hyaluronate/Healon.....	1.00	53.55000	53.55
Vancomycin/Vancocin.....	1.00	15.35000	15.35

Total Pharmaceuticals: 83.40

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Lidocaine 1%/Xylocaine 1%.....	5.00 cc	0.19000	0.95
Midazolam/Versed.....	1.00 cc	6.70000	6.70
Propofol/Diprivan.....	10.00 cc	0.46490	4.65

Total Anesthetics: 12.29

<u>Total Direct Cost:</u>	381.32	Indirect Labor Cost:	31.33
<u>Total Indirect Cost:</u>	174.82	Indirect Equipment Cost:	45.60
		Overhead:	97.89
<u>Total Cost of Procedure:</u>	556.15		

- eye shield
- intraocular lens
- sunglasses
- wetfield eraser

The costs of these additional supplies is \$165.38, which when added to the \$68.98, the cost of disposable supplies for 66170, results in a total cost for disposable supplies for the two procedures of \$234.36, which is considerably less than \$364.13, the cost of disposable supplies when each procedure is performed separately.

There is less duplication of reusable supplies, but the costs of these supplies are so low that the need for additional costs does not impact significantly on total cost. The following reusable supplies are required for the combined procedures:

- anesthesia tray
- basin set
- blood pressure cuff
- cataract tray
- cautery cord
- eye instrument set
- eye pack - linen
- gown - linen
- phaco tip
- phaco wire lid speculum
- stethoscope
- temperature monitor - electronic
- towel pack

The cost for these reusable supplies for the combined procedures is \$5.89, rather than the \$6.13 required when the procedures are performed separately.

Two items of movable equipment are used in both procedures, i.e., phaco machine and wetfield cautery machine. The costs of these items are the most substantial in the movable equipment category, and their need to be used for one combined procedure instead of two procedures reduces movable equipment costs substantially. Cost of movable equipment for the two procedures performed during the same visit is, therefore, \$8.23, rather than \$13.21, the cost of movable equipment when the procedures are performed separately.

The cost of pharmaceuticals is substantially duplicated when the two procedures are performed during the same visit. Only three pharmaceuticals are required for both procedures, but they have the highest costs. These pharmaceuticals are:

- Gentamycin/Garamycin
- Sodium Hyaluronate/ Healon
- Vancomycin/Vanocin

The costs for these three pharmaceuticals for the 66984 procedure is \$74.62, which when deducted from the combined pharmaceutical costs for the two procedures (\$117.53) is \$42.91.

Costs of anesthetics, which are low, are not considered to change when the procedures are combined. Although different anesthetics are used for each procedure, it is likely that the anesthetics used for the 66170 procedure would be sufficient for both procedures. Anesthetics cost for the combined procedures when they are performed during the same visit are, therefore, \$12.61.

Indirect costs are reduced for the two procedures when they are performed during the same visit. Indirect labor costs and indirect equipment costs are not duplicated and only the costs for 66170 need to be considered. Overhead costs are allocated based on operating room time, which means that the combined overhead cost of \$422.91 is reduced to \$369.73 when the two procedures are completed during the same visit.

Total cost for the two procedures performed during the same visit is \$959.87, compared to the combined total of \$1451.81 when each procedure is performed separately. This 34 percent reduction should be considered as an approximation. If operating room time can be reduced more substantially when the two procedures are performed during the same visit, costs will be significantly lower. As discussed in section 4.5, there is a need for more definitive research on this issue. The significance of the 34 percent reduction increases if the cost difference between completing the procedures separately and together is considered as a percentage of the cost of the second procedure. If HCFA were to discount the second procedure (66170) to pay only the amount found in this analysis to be required to cover costs, there would need to be a discount of 86 percent in the payment for the second procedure.

Using the same methodology, the costs for the joint performance of these two procedures were estimated for ambulatory surgical centers. Based on data from the ASC's that performed both CPT 66984 and CPT 66170, the cost of the two procedures when performed separately was \$1,983.50; the estimated cost of the procedures when performed during the same visit was \$1,425.68.

Exhibit 5-3 is the resource profile for CPT code 64721. This procedure can be performed as a combination when it is performed on two sites during the same visit. A review of the resource profile identifies costs that may be duplicated when two procedures are performed. The combined cost of two procedures when they are performed separately is \$1025.26.

Direct labor costs for preoperative activities are reduced since only one preoperative set of activities needs to be performed. Similarly, recovery times are not duplicated. Although the amount of time required in the operating room for the combined procedures is not clear, it is likely that the time for the second procedure is only half the first procedure since the first procedures time includes time for set up of the facility. As a result, it is likely that the combined procedures require 35 minutes of preoperative time for an R.N., 105 minutes in the operating room for the R.N. and a technician and 75 minutes for an R.N. in recovery. The resulting direct labor costs are based on 215 minutes for R.N. input and 105 minutes for a technician. Costs for

EXHIBIT 5-3

Procedure: Neuroplasty and/or transposition; median nerve at carpal tunnel

CPT: 64721

ICD: 4.43

APG: 269

Labor minutes by operating phase	Prel	Pre2	OR	Pst1	Pst2	Cost/Minute	Total Cost
Anesthesiologist.....	0	10	70	0	0	0.00000	0.00
PATIENT.....	20	20	70	60	85	0.00000	0.00
Physician.....	0	10	60	0	0	0.00000	0.00
Registered Nurse (RN).....	20	15	70	60	15	0.62000	138.21
Technician.....	0	0	70	0	0	0.32000	28.10

Total Direct Labor: 166.30

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
Adaptic dressing 3x3.....	1	0.48000	0.48
alcohol prep pad.....	5	0.01000	0.05
blade-knife #15.....	2	0.29000	0.58
catheter-20 gauge IV Jelco.....	1	0.86000	0.86
Discard-a-pad.....	1	0.06630	0.07
drain.....	1	1.35000	1.35
drape sheet.....	1	4.25000	4.25
EKG electrodes.....	3	0.23000	0.69
gauze 2x2 non-sterile.....	2	0.12000	0.24
gloves-non sterile.....	6 pair	0.08000	0.48
gloves-surgical sterile.....	1 pair	0.39000	0.39
gown.....	3 #	2.88000	8.64
head cover.....	4	0.10000	0.40
Heparin lock.....	1	1.63000	1.63
IV start kit.....	1	2.82629	2.83
Kerlix bandage 4-1/2".....	1	1.24000	1.24
Kerlix fluffs.....	1 roll	0.22000	0.22
Kling 3".....	1 roll	0.23000	0.23
lap pack.....	1	14.80000	14.80
marking pen.....	1	0.90000	0.90
mask-surgical.....	4	0.10000	0.40
needle-Keith.....	1	1.84000	1.84
patient belongings bag.....	1	0.05000	0.05
plaster splint-Xeroform 3".....	1	0.65000	0.65
prep set.....	1	2.57000	2.57
scrub brush & soap.....	4	0.30000	1.20
shoe covers.....	4 pair	0.10000	0.40
sling.....	1	10.20000	10.20
Steri strip.....	6	0.71380	4.28
stockinette 4".....	1	2.36000	2.36
suction cannister.....	1	1.60000	1.60
suction liner.....	1	1.22000	1.22
suction tip.....	1	2.05300	2.05
suture-absorbable 4-0.....	2	3.34000	6.68
suture-nylon 5-0.....	1	2.99000	2.99
syringe-Asepto.....	1	0.70000	0.70
tape-1" paper.....	1 roll	0.71000	0.71
thermometer probe cover.....	2	0.02000	0.04

EXHIBIT 5-3 (CONT.)

Procedure: Neuroplasty and/or transposition; median nerve at carpal tunnel

CPT: 64721

ICD: 4.43

APG: 269

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
tourniquet-inflatable.....	2	3.00000	6.00
tubing-IV.....	1	2.77000	2.77
tubing-oxygen.....	1	0.61000	0.61
tubing-suction.....	1	2.17000	2.17
Webril 3".....	2	0.72000	1.44

Total Disposable Supplies: 93.25

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
basin set.....	1	20.00000	500	0.04
blood pressure cuff.....	1	187.00000	5000	0.04
knife handle.....	2	62.00000	2000	0.06
light handle.....	1	14.60000	500	0.03
nerve micro instrument set.....	1	2500.00000	108	23.15
plastic instrument set.....	1	2111.67000	2000	1.06
stethoscope.....	1	44.50000	3000	0.01
temperature monitor-electronic.....	1	400.00000	3000	0.13
tourniquet cuff.....	1	400.00000	1000	0.40
towel pack.....	1	10.00000	100	0.10

Total Reusable Supplies: 25.02

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
Bovie machine.....	1	8198	10000	0.819800	0.82
hand table.....	1	3000	5000	0.600000	0.60
tourniquet machine.....	1	6400	5000	1.280000	1.28

Total Movable Equipment: 2.69

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Lactated Ringers/.....	1000.00 ml	0.00089	0.89
Midazolam/Versed.....	2.00 mg	1.42200	2.84
Triple antibiotic/Neosporin.....	250.00 cc	0.05000	12.50

Total Pharmaceuticals: 16.23

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Lidocaine 1%/Xylocaine 1%.....	30.00 cc	0.19000	5.70
Propofol/Diprivan.....	50.00 cc	0.46490	23.25

Total Anesthetics: 28.94

EXHIBIT 5-3 (CONT.)

<u>Total Direct Cost:</u>	332.46	└ Indirect Labor Cost:	30.81
<u>Total Indirect Cost:</u>	171.91	└ Indirect Equipment Cost:	44.84
		└ Overhead:	96.26
<u>Total Cost of Procedure:</u>	504.37		

these personnel are \$174.47, which is substantially less than direct labor costs when the procedures are performed separately (\$279.94).

Some disposable supplies are duplicated when two procedures are performed during the same visit. Only one of the following supplies are needed when two procedures are performed:

- catheter - 20 gauge IV Jelco
- drain
- drape sheet
- EKG electrodes
- gloves - non-sterile
- gloves - surgical sterile
- gown
- head cover
- IV start kit
- lap pack
- marking pen
- mask - surgical
- needle - Keith
- patient belongings bag
- prep set
- scrub brush and soap
- shoe covers
- sling
- syringe - Asepto
- thermometer probe cover
- tubing - IV
- tubing - oxygen
- tubing - suction

The cost of these supplies is \$58.55, which reduces the cost of supplies for the combined procedures performed during the same visit from \$196.58 to \$138.43. Only one set of reusable supplies is required, which reduces these costs from \$50.04 when the two procedures are performed separately to \$25.02 when they are performed during the same visit. Similarly, movable equipment costs are not duplicated when the two procedures are performed which results in a cost of \$3.87 rather than \$7.74, the cost of two procedures. Additional pharmaceuticals, beyond those required for a single procedure are also not needed which means that the pharmaceutical cost of the two procedures performed during the same visit is \$3.76, as opposed to \$7.52, the cost of the two procedures performed separately. It is assumed that the cost of anesthetics required to perform two procedures is twice as much as the cost for a single procedure (a total cost for the two procedures of \$35.44).

Indirect labor costs and indirect equipment costs for the two procedures are the same as they are for a single procedure. Overhead costs, which are tied to operating room time, however, increase from \$176.24 to \$264.36 (versus the overhead cost of \$352.48 if the two procedures

were performed at separate visits). As a result, total indirect cost for the two procedures performed at the same time is \$336.92, which is substantially lower than the cost for the two procedures performed separately (\$497.62).

Total cost for the two procedures performed during the same visit is \$689.13, which is 33 percent less than the cost of the two procedures performed separately (\$1025.26). If HCFA were paying for these procedures using the costs measured in this study, the second carpal tunnel release would need to be paid at a 66 percent discount to account for the differences in cost incurred when the two procedures are completed at the same time.

The estimated cost of performing multiple procedures of CPT 64721 in an ASC is \$790.84; the cost of providing the two procedures at separate times is \$1,161.92.

Resource profiles for the third procedure combination are presented in Exhibits 5-4 and 5-5. This combination is for procedure codes 52601 (TURP) and 54520 (Orchiectomy). As shown in the profiles, total costs for the two procedures when they are performed separately is \$1,065.97.

There is substantial duplication in direct labor when the procedures are performed during the same visit. The longer preoperative time, i.e., the 60 minutes for 52601, is sufficient for both procedures. The operating room time of 50 minutes for each procedure includes duplication of set up time, which is estimated at 15 minutes. In this analysis, operating room time for the combined procedures is reduced from 100 minutes to 85 minutes. The longer recovery time is needed for 54520 (210 minutes), but that time is sufficient for recovery for both procedures. When the two procedures are performed during the same visit, direct labor time is 210 LPN minutes, 355 RN minutes and 85 technician minutes. Cost for this time is \$184.27, which is substantially below the direct labor cost for the two procedures performed separately (\$366.83).

Costs of disposable supplies are also duplicated when the two procedures are performed during the same visit. Costs for the following supplies are only incurred once when the procedure combination is performed:

- back table drape
- catheter - 20 gauge IV Jelco
- drape
- EKG electrodes
- gloves - surgical sterile
- gown
- grounding pad
- head cover
- IV start kit
- mask - surgical
- patient belongings bag
- shoe covers
- suction liner

EXHIBIT 5-4

Procedure: Transurethral resection or prostate, including control of postoperative bleeding

CPT: 52601

ICD: 60.20

APG: 214

Labor minutes by operating phase	Prel	Pre2	OR	Pat1	Pat2	Cost/Minute	Total Cost
Anesthesiologist.....	0	0	50	0	0	0.00000	0.00
Licensed Practical Nurse (LPN).....	0	60	0	60	120	0.28000	81.92
PATIENT.....	0	60	50	60	120	0.00000	0.00
Physician.....	0	0	50	0	0	0.00000	0.00
Registered Nurse (RN).....	0	60	50	60	120	0.47000	165.70
Technician.....	0	0	50	0	0	0.34000	20.53

Total Direct Labor: 268.15

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
back table drape.....	1	1.74000	1.74
basin.....	1	0.25000	0.25
bipolar Bovie cord.....	1	3.33000	3.33
bladder evacuator.....	1	11.00000	11.00
catheter-20 gauge IV Jelco.....	1	0.86000	0.86
catheter-Foley.....	1	0.81000	0.81
cysto pack.....	1	8.08700	8.09
drape-TUR.....	1	12.85000	12.85
EKG electrodes.....	6	0.23000	1.38
Foley catheter bag.....	1	3.70000	3.70
Foley leg strap.....	1	2.87000	2.87
gloves-surgical sterile.....	4 pair	0.39000	1.56
gown-disposable.....	4	2.88000	11.52
grounding pad.....	1	2.89700	2.90
head cover.....	4	0.10000	0.40
IV start kit.....	1	2.82629	2.83
leggings.....	2	3.14500	6.29
mask-surgical.....	4	0.10000	0.40
patient belongings bag.....	1	0.08000	0.08
Ray tec sponge.....	1	0.11800	0.12
shoe covers.....	4 pair	0.10000	0.40
stopcock.....	2	0.68300	1.37
suction liner.....	1	1.22000	1.22
suction tip.....	1	2.05300	2.05
syringe-10cc.....	1	0.26000	0.26
syringe-60cc irrigation.....	1	0.35750	0.36
tape-2" paper.....	1 roll	1.07000	1.07
towel.....	1	0.50000	0.50
tubing-IV.....	1	0.65000	0.65
tubing-suction.....	1	2.17000	2.17
tubing-Y.....	1	7.70000	7.70

Total Disposable Supplies: 90.71

EXHIBIT 5-4 (CONT.)

Procedure: Transurethral resection of prostate, including control of postoperative bleeding

CPT: 52601

ICD: 60.20

APG: 214

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
basin.....	2	20.00000	500	0.08
blood pressure cuff.....	1	187.00000	5000	0.04
catheter guide.....	1	85.00000	1000	0.09
cloth leggings.....	2	15.00000	50	0.60
Jewel dilator.....	5	214.00000	1000	1.07
stethoscope.....	1	44.50000	3000	0.01
temperature monitor-electronic.....	1	400.00000	3000	0.13

Total Reusable Supplies: 2.02

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
cautery machine.....	1	3500	5000	0.700000	0.70
cysto OR table with drain pan.....	1	10042	10000	1.004200	1.00

Total Movable Equipment: 1.70

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
/KY jelly.....	1.00	0.33000	0.33
Glyceride/.....	1200.00 ml	0.00100	1.20
H2O irrigation solution steril/.....	8000.00 cc	0.00038	3.04

Total Pharmaceuticals: 4.57

Anesthetics: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Bupivacaine 0.5%/Marcaine 0.5%.....	30.00 ml	0.13500	4.05
Lidocaine 1% with epinephrine/Xylocaine 1% with ep	20.00 ml	0.04900	0.98
Midazolam/Versed.....	2.00 mg	1.73000	3.46
Tetracaine/.....	1.00	1.33000	1.33

Total Anesthetics: 9.82

<u>Total Direct Cost:</u>	376.98	Indirect Labor Cost:	30.29
<u>Total Indirect Cost:</u>	115.56	Indirect Equipment Cost:	38.00
		Overhead:	47.26
<u>Total Cost of Procedure:</u>	492.55		

EXHIBIT 5-5

Procedure: Orchiectomy, simple, w/ or w/o testicular prosthesis, scrotal or inguinal approach (unilateral)

CPT: 54520

ICD: 62.30

APG: 209

Labor minutes by operating phase	Prel	Pre2	OR	Pat1	Pat2	Cost/Minute	Total Cost
Anesthesiologist.....	0	0	50	60	0	0.00000	0.00
Licensed Practical Nurse (LPN).....	0	45	0	0	150	0.28000	66.56
PATIENT.....	0	45	50	60	150	0.00000	0.00
Physician.....	0	0	50	0	150	0.00000	0.00
Registered Nurse (RN).....	0	45	50	60	150	0.47000	174.27
Technician.....	0	0	50	0	0	0.34000	20.53

Total Direct Labor: 261.36

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
back table drape.....	1	1.74000	1.74
blade-knife.....	2	0.21000	0.42
catheter-20 gauge IV Jelco.....	1	0.86000	0.86
drape towel.....	4	1.17000	4.68
drape-lap.....	1	5.85000	5.85
EKG electrodes.....	3	0.23000	0.69
endotracheal tube.....	1	1.84000	1.84
gauze 4x4 non-sterile.....	10	0.43950	4.40
gloves-non sterile.....	5 pair	0.08000	0.40
gloves-surgical sterile.....	2 pair	0.39000	0.78
gown-surgical sterile.....	4	3.11000	12.44
grounding pad.....	1	2.89700	2.90
head cover.....	4	0.10000	0.40
ice pack.....	1	3.69000	3.69
IV start kit.....	1	2.82629	2.83
mask-surgical.....	4	0.10000	0.40
oral airway.....	1	0.52000	0.52
oxygen humidifier.....	1	1.25000	1.25
patient belongings bag.....	1	0.08000	0.08
prep set.....	1	2.57000	2.57
Ray tec sponge 4x4.....	20	0.15600	3.12
shoe covers.....	4 pair	0.10000	0.40
suction liner.....	1	1.22000	1.22
suction tip.....	1	2.05300	2.05
suture.....	5	3.00000	15.00
tape-2" paper.....	1 roll	1.07000	1.07
tape-mole skin.....	1 roll	1.95800	1.96
tongue blade.....	1	0.05500	0.06
tubing-anesthesia.....	1	0.97000	0.97
tubing-IV.....	1	0.65000	0.65
tubing-suction.....	1	2.17000	2.17
urinal.....	1	0.31000	0.31

Total Disposable Supplies: 77.70

EXHIBIT 5-5 (CONT.)

Procedure: Orchiectomy, simple, w/ or w/o testicular prosthesis, scrotal or inguinal approach (unilateral)

CPT: 54520

ICD: 62.30

APG: 209

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
basin.....	2	20.00000	500	0.08
blood pressure cuff.....	1	187.00000	5000	0.04
cautery forcep.....	1	218.90000	500	0.44
minor basic set.....	1	1851.00000	2000	0.93
stethoscope.....	1	44.50000	3000	0.01
temperature monitor-electronic.....	1	600.00000	3000	0.13

<u>Total Reusable Supplies:</u>	1.62
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Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
cautery machine.....	1	3500	5000	0.700000	0.70

Total Movable Equipment: 0.70

Pharmaceuticals: Generic/Brand Name	Dosage:Unit	Unit Cost	Total Cost
Dextrose 5% Lactated Ringers/DSLR.....	1000.00 ml	0.00089	0.89
Meperidine/Demerol.....	50.00 mg	0.04400	2.20
Metoclopramide/Reglan.....	100.00 mg	0.05000	5.00

Total Pharmaceuticals: 8.09

Anesthetics: Generic/Brand Name	Dosage/Unit	Unit Cost	Total Cost
Fentanyl/Sublimaze.....	2.00 ml	1.04000	2.08
Isoflurane/Forane.....	15.00 cc	0.89400	13.41
Midazolam/Versed.....	2.00 mg	1.73000	3.46
Neostigmine/Prostigmine.....	5.00 mg	1.13000	5.65
Nitrous oxide gas/.....	300.00 liter	0.00100	0.30
Oxygen gas/.....	200.00 liter	0.00050	0.10
Pentothal/.....	10.00 ml	0.01159	0.12
Propofol/Diprivan.....	40.00 cc	0.46490	18.60
Succinyl Choline/Anectine.....	6.00 mg	0.10000	0.60

Total Anesthetics: 44.31

Total Direct Cost:	393.80	Indirect Labor Cost:	30.29
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<u>Total Indirect Cost:</u>	115.56	—	Indirect Equipment Cost:	38.00
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Overhead	47.26
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Total Cost of Procedure: 509.36

- suction tip
- tubing - IV
- tubing - suction

Use of these supplies for both procedures results in a savings of \$43.01, which reduces disposable supply costs for the two procedures from \$231.58 to \$188.57.

Costs of reusable supplies are limited and most are duplicated when the two procedures are performed. The 52601 procedure has unique needs for a catheter guide, cloth leggings and a Jewel dilator. The 54520 procedure has unique needs for a cautery forcep and a minor basic set. The combined reusable supply costs for the two procedures performed during the same visit are \$3.38, rather than the combined cost of \$3.64 when the procedures are performed separately. Costs for movable equipment are limited. Both procedures require a cautery machine and the 52601 procedure requires a cysto OR table with drain pan for a total cost for both procedures performed during the same visit of \$7.29 rather than \$7.99, the cost when the procedures are performed separately.

There are no savings in pharmaceuticals when the two procedures are performed at the same time since different pharmaceuticals are used for each procedure. Total pharmaceutical costs are \$12.58. It is assumed that the anesthetics used for the 54520 procedure are sufficient for both procedures. Anesthetics costs are, therefore, reduced from \$69.91 to \$43.07.

Indirect labor and equipment costs associated with each procedure are not duplicated when more than one procedure is performed during the same visit. Overhead costs are allocated based on operating room time which means that overhead costs for the combined procedures are \$190.30, rather than \$233.89, which is required for the two procedures performed separately. Total indirect costs are \$270.43, which is substantially below the costs for the two procedures performed separately (\$377.37).

Total cost for the combined procedures when they are performed during a single visit is \$705.95, which is 34 percent lower than the cost of performing the two procedures separately. The cost of the second procedure (54520) would need to be discounted 68 percent to account for the difference in cost when the two procedures are completed together.

The total cost for the two procedures performed separately at an ASC is estimated to be \$1,709.39; the total cost for the combination of procedures is \$1,114.05.

As indicated, the analysis presented in this section of three procedure combinations is intended as approximate and suggestive and not definitive. The research required to arrive at a definitive conclusion is described in section 5.5. Nevertheless, the relationship between the cost for each set of procedures is noteworthy. On average, the difference between the cost of performing each of the procedure combinations during the same visit and during separate visits is 34 percent. The average discount that needs to be applied to the second procedure to match the resource costs of performing the two procedures at the same time is approximately 70 percent

which is considerably greater than 50 percent of the payment rate for the second procedure which is now paid by HCFA.

5.4 COSTS OF KEY PROCEDURE COMBINATION - RADIOLOGY

A single radiology procedure combination was selected for study. The combination consists of a simple chest X-ray (CPT 71020) and a mammogram (CPT 76091). The resource profiles for a single facility in which both procedures are performed are presented in Exhibits 5-6 and 5-7. It is important to understand the substantial differences between radiology and ambulatory surgery before comparing the profiles. When two ambulatory surgery procedures are performed during the same visit, there is duplication of patient preparation time, patient recovery time and operating room set up time. There may also be duplication of anesthetics, supplies and equipment. Time savings in the operating room also result in lower indirect costs. When two or more radiology procedures are completed, there is little duplication because the procedures are discrete. Although two or more may be completed during a single visit, they are completed sequentially rather than simultaneously.

The combination of a chest X-ray and a mammogram does not result in a substantial difference in cost as compared to performing each procedure separately. Since different equipment is used, the technologist cannot produce direct labor savings when the two procedures are performed during the same visit. There are minimal savings in disposable supplies since the same set of gloves can be used for both procedures, but other supplies are specific to the test and must be duplicated. Different movable equipment is required for each test, which means that total differences in direct costs are limited to gloves, which have a cost of \$.60. Since there is no savings in time and the procedures are, in fact, conducted separately, there is no difference in indirect cost. The cost of these two radiology procedures performed during the same visit is, therefore, approximately the same as the cost when they are performed separately.

5.5 SUMMARY OF COSTS OF PROCEDURE COMBINATION

A summary of the combined costs of the four procedure combinations included in the study is shown in Exhibit 5-8.

5.6 REQUIRED ADDITIONAL ANALYSES

Implementation of an outpatient prospective payment system will be assisted by an understanding of marginal costs of additional procedures performed when a primary procedure is completed. The analyses presented in this chapter provide insights to marginal costs without measuring them in depth. Additional work in identifying marginal costs needs to be completed. Such work requires investigation of a larger number of procedure combinations and the creation of resource profiles for the combined procedures. Such resource profiles have not yet been developed.

EXHIBIT 5-6

Procedure: Radiologic examination, chest; two views, frontal and lateral

CPT: 71020

ICD:

APG: J51

Labor minutes by operating phase	Prel	Pre2	OR	Pat1	Pat2	Cost/Minute	Total Cost
Radiologist.....	0	5	0	0	0	0.00000	0.00
Radiology Technologist.....	1	4	0	0	0	0.51000	3.20

Total Direct Labor: 3.20

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
film-chest.....	2	1.90000	3.80
gloves.....	2 pair	0.34000	0.68
tape-for markers.....	1	0.50000	0.50

Total Disposable Supplies: 4.98

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
cassette-chest.....	2	565.00000	500	2.26

Total Reusable Supplies: 2.26

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
film processor.....	1	6007	5000	1.201400	1.20
film viewer.....	1	283	500	0.566000	0.57
grid.....	1	966	500	1.932000	1.93
pigg-o-stat.....	1	804	500	1.608000	1.61
sponge-support.....	1	605	500	1.210000	1.21
x-ray machine portable.....	1	49432	10000	4.943200	4.94

Total Movable Equipment: 11.46

<u>Total Direct Cost:</u> 21.90	┌ Indirect Labor Cost: 3.23
<u>Total Indirect Cost:</u> 14.00	
	└ Indirect Equipment Cost: 3.80
	└ Overhead: 6.98

Total Cost of Procedure: 35.91

EXHIBIT 5-7

Procedure: Mammography; bilateral

CPT: 76091

ICD:

APG: 350

Labor minutes by operating phase	Prel	Pre2	OR	Pat1	Pat2	Cost/Minute	Total Cost
Radiologist.....	0	10	0	0	0	0.00000	0.00
Radiology Technologist.....	5	20	0	0	0	0.51000	16.00

Total Direct Labor: 16.00

Disposable Supplies	Quantity:Unit	Unit Cost	Total Cost
alcohol.....	1	0.52000	0.52
film-Kodak MRE.....	5	1.15000	5.75
gauze pad.....	1	0.05000	0.05
gloves.....	1 pair	0.34000	0.34
marker-Xspot.....	2	0.63000	1.26
tape-for markers.....	1	0.50000	0.50

Total Disposable Supplies: 8.42

Reusable Supplies	Quantity:Unit	Unit Cost	# Uses	Total Cost
cassette.....	1	315.00000	500	0.63

Total Reusable Supplies: 0.63

Movable Equipment	Quantity	Price	# of Uses	Cost/Use	Total Cost
film processor.....	1	6007	5000	1.201400	1.20
film viewer.....	1	283	500	0.566000	0.57

Total Movable Equipment: 1.76

Total Direct Cost: 26.82 Indirect Labor Cost: 12.93

Total Indirect Cost: 56.03 Indirect Equipment Cost: 15.20

Overhead: 27.91

Total Cost of Procedure: 82.85

**SUMMARY OF COSTS INCURRED WHEN
PROCEDURE COMBINATIONS ARE PERFORMED IN HOSPITALS AND ASCs**

CPT-4 CODES/ PROCEDURE COMBINATION	TOTAL RESOURCE COST: PROCEDURES PERFORMED SEPARATELY	TOTAL RESOURCE COST: PROCEDURES PERFORMED TOGETHER	PERCENT DIFFERENCE	COST DISCOUNT AS PERCENTAGE OF RESOURCE COST OF SECOND PROCEDURE
Hospitals				
66984 - Cataract removal by extracapsular surgery and Intraocular implantation and 66170 - Trabeculectomy	\$1,451.81	\$957.35	34%	86%
64721 - Decompression of carpal tunnel (multiple procedures)	\$1,025.26	\$689.13	33%	66%
52601 - Transurethral resection of prostate (TURP) and 54520 - Simple bilateral orchiectomy	\$1,065.97	\$705.95	34%	68%
71020 - Radiologic examination, chest, two views and 76091 - Mammography, bilateral	\$98.84	Not Significant	N.A.	N.A.
ASCs				
66984 - Cataract removal by extracapsular surgery and intraocular implantation and 66170 - Trabeculectomy	\$1,983.50	\$1,425.68	28%	62%
64721 - Decompression of carpal tunnel (multiple procedures)	\$1,161.92	\$790.84	32%	64%
52601 - Transurethral resection of prostate (TURP) and 54520 - Simple bilateral orchiectomy	\$1,709.39	\$1,114.05	35%	86%
71020 - Radiologic examination; chest, two views and 76091 - Mammography, bilateral	\$120.30	Not Significant	N.A.	N.A.

Source: CHPS Outpatient Resource Costing Data Base

Resource costing can be used to identify combination-specific marginal costs and not generic models of marginal cost. It is possible, of course, that the costing of a sufficient number of resource profiles will allow a general model of marginal cost to be discerned. Marginal costing, however, needs to focus on the most common procedure combinations. Such an approach will assure HCFA that an accurate understanding of the cost composition of these combinations is available while setting the groundwork for a broader understanding of marginal costs. The highest volume ambulatory surgery procedure combinations include those studied in this chapter. The following combinations are appropriate for additional study:

- Cataract removal by extracapsular surgery and intraocular lens implantation with trabeculectomy. (66984 and 66170),
- Bilateral decompression of carpal tunnel (84721),
- Direct diagnostic laryngoscopy with diagnostic bronchoscopy (31525 and 31622),
- Excision of two benign lesions including simple closure (on the right foot, 1.1 to 2.0 cm.) (11422),
- TURP with simple bilateral orchiectomy (52601 and 54520),
- Extracorporeal shock wave lithotripsy with cystourethroscopy with insertion of indwelling urethral stent (50590 and 52332), and
- Complex cystometrogram with a complex uroflowmetry (51741 and 51726).

Combinations of high volume radiology, laboratory and medical services can also be studied if they are identified as occurring frequently.

**6. COMPARISON OF RESOURCE COSTS TO OTHER RELEVANT
MEASURES AND TO REPORTED COSTS**

6. COMPARISON OF RESOURCE COSTS TO OTHER RELEVANT MEASURES AND TO REPORTED COSTS

6.1 INTRODUCTION

This chapter is devoted to a presentation and discussion of the comparison of resource costs to other relevant measures and to reported costs. In the first part of the chapter, three measures which are compared to resource costs are included in the discussion: charges, ASC payment rates and the RBRVS practice expense component. The chapter includes comparisons of average resource costs incurred by providers included in the study to these three alternative measures. Comparisons are limited to the activities for which CPT-4 procedure codes are applicable. These analyses have been conducted for several reasons. First, the utility and accuracy of resource costs needs to be assessed in relation to alternative resource measures. Second, both charges and ASC payment rates are related to current payment levels in hospitals and ambulatory surgery centers. Finally, a comparison of resource costs to RBRVS practice expense RVUs may provide some indication as to the correlation between resource costs and physician charge based RVUs.

The second part of the chapter compares resource costs to reported costs. The discussion is related to preceding discussions since it includes an analysis of the effect of charges on the calculation of Medicare hospital reported costs. Specifically, problems inherent in the allocation of overhead expenses and the influence of incentives associated with the current payment environment are identified. Methods of measuring Medicare hospital reported costs are directly related to hospital charges.

6.2 PROCEDURE-SPECIFIC COST COMPARISONS

In this section, Medicare costs are compared with facility cost measures on a procedure specific level. Medicare costs were developed by reducing hospital charges to costs using a ratio of costs to charges. As discussed later in section 6.5, current reimbursement incentives distort the relationship between charges, cost derived from charges, and resource use. Cost reimbursement for ambulatory services or some blend thereof, combined with DRG prices for inpatient services, creates an incentive to move costs to ambulatory cost centers or cost centers with high ambulatory utilization. The impact of specialty and payer mix on what the market will bear are additional factors that can distort charges and RCCAC costs. It is important to note that charges are a revenue device for providers of health services and that their relationship to costs is secondary and in many cases only tangential to generating revenue.

In Exhibit 6-1, Medicare claims volumes are presented for nine high volume ambulatory surgery procedures. In Exhibit 6-2, Medicare costs for the hospitals included in the study are compared to resource costs for the same hospitals for these selected high volume procedures. If a consistent costing structure is used, and resource costs are an accurate reflection of resource use, the ratio between resource costs and Medicare costs would be relatively constant across all

**MEDICARE CLAIMS VOLUME,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	MEDICARE CLAIMS VOLUME	PERCENTAGE OF TOTAL VOLUME
66984	Extracapsular cataract removal with insertion of intraocular lens	197,719	0.12
45378	Colonoscopy, diagnostic	87,184	0.05
45385	Colonoscopy, for removal of polypoid lesion	60,015	0.04
49505	Repair of inguinal hernia, age 5 or over	20,008	0.01
43239	Upper GI endoscopy, for biopsy or collection of specimen	57,852	0.04
43235	Upper GI endoscopy, diagnostic	57,049	0.04
19120	Excision of cyst	21,951	0.01
52000	Cystourethroscopy (separate procedure)	37,237	0.02
45380	Colonoscopy, for biopsy	36,458	0.02
	ALL PROCEDURES	1,627,505	

Source: 1992 Medicare Hospital Outpatient Claims Data

**HOSPITAL TOTAL RESOURCE COSTS VS. HOSPITAL MEDICARE COSTS,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	HOSPITAL MEAN TOTAL RESOURCE COST	STANDARD DEVIATION OF HOSPITAL TOTAL RESOURCE COST	HOSPITAL MEDICARE COST	RATIO OF MEAN RESOURCE COST TO MEDICARE COST	DIFFERENCE BETWEEN MEAN RESOURCE COST AND MEDICARE COST	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
							HIGHER HOSPITAL MEAN RESOURCE COST	HIGHER HOSPITAL MEDICARE COST	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	\$947.52	\$260.67	\$1,258.35	0.75	(\$310.83)		✓	
45378	Colonoscopy, diagnostic	\$345.41	\$134.69	\$308.35	1.12	\$37.06			✓
45385	Colonoscopy, for removal of polypoid lesion	\$381.03	\$123.00	\$361.60	1.05	\$19.43			✓
49505	Repair of inguinal hernia, age 5 or over	\$571.91	\$147.01	\$967.02	0.59	(\$395.11)		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	\$343.54	\$99.40	\$303.78	1.13	\$39.76	✓		
43235	Upper GI endoscopy, diagnostic	\$301.42	\$81.76	\$259.99	1.16	\$41.43	✓		
19120	Excision of cyst	\$542.56	\$166.87	\$656.82	0.83	(\$114.26)		✓	
52000	Cystourethroscopy (separate procedure)	\$424.59	\$145.02	\$337.33	1.26	\$87.26	✓		
45380	Colonoscopy, for biopsy	\$389.89	\$137.68	\$330.56	1.18	\$59.33	✓		
	ALL SURGICAL PROCEDURES	\$522.63	\$838.17	\$479.58	1.09	\$43.05	✓		

Sources

Hospital Resource Costs - CHPS Outpatient Resource Costing Data Base

Hospital Medicare Costs - 1992 Medicare Hospital Outpatient Claims Data

procedures. As presented in the exhibit, however, the ratio is not constant. The ratio has a range of between .59 for CPT-49505, repair of inguinal hernia, to 1.26 for CPT-4 52000, cystourethroscopy. Medicare hospital costs, which range from \$259.99 to \$1,258.35, do not display a consistent relationship to resource costs. For the nine procedures shown, however, the general pattern of the relationship can be seen. For low cost procedures, the ratio is higher than for high cost procedures.

Hospital total resource costs are higher than Medicare costs for four of the nine procedures listed in Exhibit 6-2, lower than Medicare costs for three of the nine, and are not statistically different from the Medicare costs in the remaining two cases. Once again, the three highest Medicare cost procedures are the ones that have the lowest relative hospital resource costs, and the lower Medicare cost procedures have the relatively higher relative hospital total resource costs.

However, there is one very interesting point to be noted. The correlation coefficient (for the nine procedures listed in Exhibit 6-2) between the Medicare costs and hospital total resource costs is .95, an estimate that is significant at the one percent level. This would indicate Medicare costs and hospital total resource costs for the nine procedures studied, while differing in magnitude, do have a strong tendency to vary proportionally across procedures. In addition, the correlation coefficient between Medicare costs and ASC total resource costs is .99, and the correlation coefficient between Medicare costs and all facilities is .97. Both these estimates are significant at the one percent level.

The trend in the data is clear. For low Medicare cost procedures, resource costs are generally higher than Medicare costs and for high Medicare cost procedures, resource costs are lower than Medicare costs. This trend has important implications for payment policy. The development of relative values from Medicare cost data would result in the overpayment of some procedures and the underpayment of others. If volume and payer mix were considered in this analysis, the problems with Medicare costs would be even more apparent. The results suggest problems with using an average ratio of cost to charges to establish payment rates. While the result on average may be correct, distortions on a per procedure basis are significant. The use of Medicare costs to develop relative values will result in a disincentive to provide low cost procedures and an incentive to provide high cost services. These results are similar to those discussed earlier and are the result of the mathematical relationship between charges and RCCAC costs.

6.3 COMPARISON OF RESOURCE COSTS TO ASC PAYMENT RATES

In this section, comparisons of resource costs to HCFA's ASC payment rates are presented. Eight payment groups have been developed to pay HCFA approved ambulatory surgery centers (ASCs). The payment groups are designed to reflect resource use and are updated regularly by HCFA staff. The ASC payment groups cover a subset of procedures investigated in this study. The ASC payment rates are important since they are the rates at which ASCs are paid by Medicare, and they are a component of the blended rate Medicare uses to pay

hospitals for ambulatory surgery. The analysis in this section includes comparisons of both hospital and ASC derived resource costs to ASC payment rates.

In Exhibit 6-3, ASC payment rates are compared to ASC resource costs for selected high volume procedures. Since the ASC payment rates are intended to reflect resource use and are updated regularly, they should be more closely correlated to resource costs than Medicare costs. In addition, they should be valid for both ambulatory surgery centers and hospitals since they are used in both settings. In Exhibit 6-4, ASC payment rates are compared to hospital resource costs. For ASCs, as presented in Exhibit 6-3, the resource cost to ASC payment ratio has a range of between .98 for CPT-4 45378, diagnostic colonoscopy, to 1.58 for CPT-4 52000, cystourethroscopy. ASC payment rates range from \$295 to \$930. For hospital resource costs, the ratio ranges from .87 for CPT-4 45378, to 1.44 for CPT-4 52000. Exhibit 6-5 is a summary exhibit which contains the total resource costs for all facilities, hospitals and ASCs, and compares them to ASC payment rates.

Several significant findings can be identified from this analysis. First, ASC payment rates are more closely related to hospital resource costs than to ASC resource costs; the correlation coefficient between ASC total resource costs and ASC payment rates for the nine procedures studied is .91, and the correlation coefficient between hospital total resource costs and ASC payment rates is .95 for the same procedures. Both these values are statistically significant at the one percent level, but there is a marginally stronger positive relationship between the hospital costs and the ASC payments. As would be expected, the relationship between the total resource costs for all facilities and ASC payment rates for these nine procedures is stronger than the relationship between the ASC total cost and ASC payment rates; the correlation coefficient for that relationship is .94. As discussed in Chapter 4, ASC resource costs are generally higher than hospital resource costs, which results in the ASC payment rates being more similar to hospital resource costs rather than they are to ASC resource costs.

In terms of statistical significance of the difference between the various cost measures and the ASC payments, there are three procedures (of the nine examined in detail) that entail higher ASC resource costs, and six procedures for which there is no difference between resource costs and ASC payments. There are two procedures for which hospitals have higher resource costs, two procedures that have higher ASC payment rates, and five for which there is no statistical difference between the resource cost and the ASC payment. For all surgical procedures as a group, both hospitals and ASCs have statistically higher resource costs than ASC payment.

In addition, ASC payment rates are of approximately the same magnitude as the resource costs from both hospitals and ASCs. Even though ASC payment rates have been grouped into eight discrete levels, which should introduce differences at the margin for the groups when compared to a continuous variable such as resource costs, the relationship appears significant.

**ASC TOTAL RESOURCE COSTS VS. ASC PAYMENT RATES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	ASC MEAN TOTAL RESOURCE COST	STANDARD DEVIATION OF ASC TOTAL RESOURCE COST	ASC PAYMENT RATE	RATIO OF MEAN RESOURCE COST TO PAYMENT RATE	DIFFERENCE BETWEEN MEAN RESOURCE COST AND PAYMENT RATE	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
							HIGHER ASC MEAN RESOURCE COST	HIGHER ASC PAYMENT RATE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	\$935.87	\$312.13	\$930.00	1.01	\$5.87			✓
45378	Colonoscopy, diagnostic	\$386.07	\$188.28	\$395.00	0.98	(\$8.93)			✓
45385	Colonoscopy, for removal of polypoid lesion	\$494.77	\$291.71	\$395.00	1.25	\$99.77			✓
49505	Repair of inguinal hernia, age 5 or over	\$767.19	\$267.72	\$558.00	1.37	\$209.19	✓		
43239	Upper GI endoscopy, for biopsy or collection of specimen	\$390.89	\$142.40	\$395.00	0.99	(\$4.11)			✓
43235	Upper GI endoscopy, diagnostic	\$391.40	\$201.84	\$295.00	1.33	\$96.40			✓
19120	Excision of cyst	\$613.05	\$235.53	\$453.00	1.35	\$160.05	✓		
52000	Cystourethroscopy (separate procedure)	\$465.85	\$109.93	\$295.00	1.56	\$170.85	✓		
45380	Colonoscopy, for biopsy	\$464.39	\$193.84	\$395.00	1.18	\$69.39			✓
	ALL SURGICAL PROCEDURES	\$590.17	\$336.92	\$444.14	1.33	\$146.03	✓		

Sources

ASC Resource Costs - CHPS Outpatient Resource Costing Data Base

ASC Payment Rates - 1992 Medicare Fee Schedule for ASCs

**HOSPITAL TOTAL RESOURCE COSTS VS. ASC PAYMENT RATES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	HOSPITAL MEAN TOTAL RESOURCE COST	STANDARD DEVIATION OF HOSPITAL TOTAL RESOURCE COST	ASC PAYMENT RATE	RATIO OF MEAN RESOURCE COST TO PAYMENT RATE	DIFFERENCE BETWEEN MEAN RESOURCE COST AND PAYMENT RATE	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
							HIGHER HOSPITAL MEAN RESOURCE COST	HIGHER ASC PAYMENT RATE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	\$947.52	\$260.67	\$930.00	1.02	\$17.52			✓
45378	Colonoscopy, diagnostic	\$345.41	\$134.69	\$395.00	0.87	(\$49.59)		✓	
45385	Colonoscopy, for removal of polypoid lesion	\$381.03	\$123.00	\$395.00	0.96	(\$13.97)			✓
49505	Repair of inguinal hernia, age 5 or over	\$571.91	\$147.01	\$558.00	1.02	\$13.91			✓
43239	Upper GI endoscopy, for biopsy or collection of specimen	\$343.54	\$99.40	\$395.00	0.87	(\$51.46)		✓	
43235	Upper GI endoscopy, diagnostic	\$301.42	\$81.76	\$295.00	1.02	\$6.42			✓
19120	Excision of cyst	\$542.56	\$166.87	\$453.00	1.20	\$89.56	✓		
52000	Cystourethroscopy (separate procedure)	\$424.59	\$145.02	\$295.00	1.44	\$129.59	✓		
45380	Colonoscopy, for biopsy	\$389.89	\$137.68	\$395.00	0.99	(\$5.11)			✓
	ALL SURGICAL PROCEDURES	\$522.63	\$838.17	\$444.14	1.18	\$78.49	✓		

Sources

Hospital Resource Costs - CHPS Outpatient Resource Costing Data Base

ASC Payment Rates - 1992 Medicare Fee Schedule for ASCs

**TOTAL RESOURCE COSTS (ALL FACILITIES) VS. ASC PAYMENT RATES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	MEAN TOTAL RESOURCE COST (ALL FACILITIES)	STANDARD DEVIATION OF TOTAL RESOURCE COST (ALL FACILITIES)	ASC PAYMENT RATE	RATIO OF MEAN RESOURCE COST TO PAYMENT RATE	DIFFERENCE BETWEEN MEAN RESOURCE COST AND PAYMENT RATE	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
							HIGHER MEAN RESOURCE COST	HIGHER ASC PAYMENT RATE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	\$941.56	\$284.92	\$930.00	1.01	\$11.56			✓
45378	Colonoscopy, diagnostic	\$358.63	\$152.89	\$395.00	0.91	(\$36.37)			✓
45385	Colonoscopy, for removal of polypoid lesion	\$423.68	\$207.29	\$395.00	1.07	\$28.68			✓
49505	Repair of inguinal hernia, age 5 or over	\$655.01	\$226.59	\$558.00	1.17	\$97.01	✓		
43239	Upper GI endoscopy, for biopsy or collection of specimen	\$359.93	\$115.46	\$395.00	0.91	(\$36.07)		✓	
43235	Upper GI endoscopy, diagnostic	\$331.41	\$138.01	\$295.00	1.12	\$36.41			✓
19120	Excision of cyst	\$572.58	\$200.07	\$453.00	1.26	\$119.58	✓		
52000	Cystourethroscopy (separate procedure)	\$439.03	\$133.82	\$295.00	1.49	\$144.03	✓		
45380	Colonoscopy, for biopsy	\$415.33	\$160.66	\$395.00	1.05	\$20.33	✓		
	ALL SURGICAL PROCEDURES	\$546.54	\$703.59	\$444.14	1.23	\$102.40	✓		

Sources

Resource Costs - CHPS Outpatient Resource Costing Data Base

ASC Payment Rates - 1992 Medicare Fee Schedule for ASCs

6.4 COMPARISON OF RESOURCE COSTS TO RBRVS PRACTICE EXPENSE COMPONENT

A comparison of relative values developed using resource cost to adjusted relative values developed using the RBRVS practice expense relative values is presented in this section. The RBRVS relative values have been adjusted by dividing the RBRVS practice expense relative value by the average practice expense relative value for the procedures in our sample. This step was necessary for two reasons. First, the RBRVS fee schedule includes a much wider array of services, i.e., inpatient and outpatient services, than our sample. An adjustment, therefore, was necessary to control for the mix of procedures. The same adjustment is needed for the second reason, i.e., the conversion factor is different for the two scales. For resource costs, the scale to dollars is 1:1. For the RBRVS, the scale to dollars is approximately 1:25.

In Exhibit 6-6, resource cost relative values for hospitals are compared to adjusted RBRVS practice expense relative values. Two characteristics of the comparison can be noted. First, the measures are positively correlated; the correlation coefficient between hospital total resource cost relative values for the nine procedures studied and the RBRVS is .81, an estimate that is significant at the one percent level. In addition, the hospital resource cost relative value is statistically higher than the RBRVS for three of the nine procedures, while the RBRVS is higher for the remaining six procedures.

In Exhibit 6-7, the ASC total resource cost relative values are compared to the RBRVS values. Once again, the variables are positively correlated; however, the relationship is not as significant as that identified between the hospital resource cost relative values and the RBRVS values. The correlation coefficient is .72 for this set of data, a value that is significant at the 3 percent level. The ASC total resource cost relative values are significantly higher than the RBRVS values for the same three procedures as were found for the hospital resource cost values. One difference between the results shown in Exhibit 6-6 and Exhibit 6-7 is that there is one procedure for which there is no statistical difference between the ASC relative value and the RBRVS value, CPT-4 43235.

The second characteristic is that resource costs have a more limited range than RBRVS relative values. For hospital total resource costs, the relative values range from .58 for upper GI endoscopy (code 43235) to 1.81 for lens replacement, while the RBRVS relative values range from .29 for Cystourethroscopy to 3.97 for extracapsular lens replacement. These ranges are most likely the result of the greater variability in physician charges, on which the RBRVS relative values are based compared to the resource costs. A similar pattern can be seen in Exhibit 6-7 for ASC relative values.

Finally, in Exhibits 6-8 and 6-9, in which direct resource cost relative values have been calculated (without indirect costs), a range of values similar to the adjusted RBRVS relative values have been identified. The cause for the wider range is that direct costs reflect only case-mix related resources, i.e., variable costs, while total resource costs include both these variable costs and more consistent fixed, or indirect, costs. Inclusion of indirect costs tends to dampen the range of values. This characteristic is accentuated when relative values are calculated.

**HOSPITAL TOTAL RESOURCE COST RELATIVE VALUES
VS. RBRVS RELATIVE VALUES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	HOSPITAL TOTAL RESOURCE COST RELATIVE VALUE	STANDARD DEVIATION OF HOSPITAL TOTAL RESOURCE COST RELATIVE VALUE	RBRVS RELATIVE VALUE	DIFFERENCE BETWEEN RESOURCE COST AND RBRVS RELATIVE VALUES	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER HOSPITAL RESOURCE COST RELATIVE VALUE	HIGHER RBRVS RELATIVE VALUE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	1.81	0.50	3.97	(2.16)		✓	
45378	Colonoscopy, diagnostic	0.66	0.26	0.91	(0.25)		✓	
45385	Colonoscopy, for removal of polypoid lesion	0.73	0.24	1.48	(0.75)		✓	
49505	Repair of inguinal hernia, age 5 or over	1.09	0.28	1.00	0.09	✓		
	Upper GI endoscopy, for biopsy or collection of specimen	0.66	0.19	0.93	(0.27)		✓	
43239		0.66	0.19	0.93	(0.27)		✓	
43235	Upper GI endoscopy, diagnostic	0.58	0.16	0.61	(0.23)		✓	
19120	Excision of cyst	1.04	0.32	0.52		✓		
52000	Cystourethroscopy (separate procedure)	0.81	0.28	0.29	0.52	✓		
45380	Colonoscopy, for biopsy	0.75	0.26	1.06	(0.31)		✓	

Sources

Hospital Resource Cost Relative Values - CHPS Outpatient Resource Costing Data Base

RBRVS Relative Values - HCFA Regulations

ASC TOTAL RESOURCE COST RELATIVE VALUES
VS. RBRVS RELATIVE VALUES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

CPT CODE	PROCEDURE	ASC TOTAL RESOURCE COST RELATIVE VALUE	STANDARD DEVIATION OF ASC TOTAL RESOURCE COST RELATIVE VALUE	RBRVS RELATIVE VALUE	DIFFERENCE BETWEEN RESOURCE COST AND RBRVS RELATIVE VALUES	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER ASC RESOURCE COST RELATIVE VALUE	HIGHER RBRVS RELATIVE VALUE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	1.59	0.53	3.97	(2.38)		✓	
45378	Colonoscopy, diagnostic	0.65	0.32	0.91	(0.26)		✓	
45385	Colonoscopy, for removal of polypoid lesion	0.84	0.49	1.48	(0.64)		✓	
49505	Repair of inguinal hernia, age 5 or over	1.30	0.45	1.03	0.30	✓		
	Upper GI endoscopy, for biopsy or collection of specimen	0.66	0.24	0.93	(0.27)		✓	
43239		0.66	0.34	0.81	(0.15)			✓
43235	Upper GI endoscopy, diagnostic	1.04	0.40	0.52	0.52	✓		
19120	Excision of cyst	0.79	0.19	0.29	0.50	✓		
52000	Cystourethroscopy (separate procedure)	0.79	0.33	1.06	(0.27)		✓	
45380	Colonoscopy, for biopsy							

Sources

ASC Resource Cost Relative Values - CHPS Outpatient Resource Costing Data Base

RBRVS Relative Values - HCFA Regulations

**HOSPITAL DIRECT RESOURCE COST RELATIVE VALUES
VS. RBRVS RELATIVE VALUES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	HOSPITAL DIRECT RESOURCE COST RELATIVE VALUE	STANDARD DEVIATION OF HOSPITAL DIRECT RESOURCE COST RELATIVE VALUE	RBRVS RELATIVE VALUE	DIFFERENCE BETWEEN RESOURCE COST AND RBRVS RELATIVE VALUES	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER HOSPITAL RESOURCE COST RELATIVE VALUE	HIGHER RBRVS RELATIVE VALUE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	2.28	0.63	3.97	(1.69)		✓	
45378	Colonoscopy, diagnostic	0.66	0.16	0.91	(0.25)		✓	
45385	Colonoscopy, for removal of polypoid lesion	0.75	0.15	1.48	(0.73)		✓	
49505	Repair of inguinal hernia, age 5 or over	1.17	0.21	1.00	0.17	✓		
43239	Upper GI endoscopy, for biopsy or collection of specimen	0.76	0.15	0.93	(0.17)		✓	
43235	Upper GI endoscopy, diagnostic	0.70	0.10	0.81	(0.11)		✓	
19120	Excision of cyst	0.98	0.17	0.52	0.46	✓		
52000	Cystourethroscopy (separate procedure)	0.93	0.21	0.29	0.64	✓		
45380	Colonoscopy, for biopsy	0.74	0.17	1.06	(0.32)		✓	

Sources

Hospital Resource Cost Relative Values - CHPS Outpatient Resource Costing Data Base

RBRVS Relative Values - HCFA Regulations

**ASC DIRECT RESOURCE COST RELATIVE VALUES
VS. RBRVS RELATIVE VALUES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	ASC DIRECT RESOURCE COST RELATIVE VALUE	STANDARD DEVIATION OF ASC DIRECT RESOURCE COST RELATIVE VALUE	RBRVS RELATIVE VALUE	DIFFERENCE BETWEEN RESOURCE COST AND RBRVS RELATIVE VALUES	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER ASC RESOURCE COST RELATIVE VALUE	HIGHER RBRVS RELATIVE VALUE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	1.93	0.52	3.97	(2.04)		✓	
45378	Colonoscopy, diagnostic	0.63	0.15	0.91	(0.28)		✓	
45385	Colonoscopy, for removal of polypoid lesion	0.75	0.19	1.48	(0.73)		✓	
49505	Repair of inguinal hernia, age 5 or over	1.22	0.19	1.00	0.22	✓		
43239	Upper GI endoscopy, for biopsy or collection of specimen	0.71	0.23	0.93	(0.22)		✓	
43235	Upper GI endoscopy, diagnostic	0.71	0.24	0.81	(0.10)			✓
19120	Excision of cyst	0.92	0.21	0.52	0.40	✓		
52000	Cystourethroscopy (separate procedure)	0.90	0.23	0.29	0.61	✓		
45380	Colonoscopy, for biopsy	0.77	0.21	1.06	(0.29)		✓	

Sources

ASC Resource Cost Relative Values - CHPS Outpatient Resource Costing Data Base

RBRVS Relative Values - HCFA Regulations

Interestingly enough, the relationship between the direct cost relative values and the RBRVS values is stronger than that found between the total cost relative values. The correlation coefficient for the hospital direct cost relative values and the RBRVS values is .87; the correlation coefficient for the ASC direct cost relative values and the RBRVS values is .83. Both these values are significant at the one percent level.

The patterns of differences in direct cost based values and the RBRVS values follows that of the total cost based values exactly.

6.5 COMPARISON OF RESOURCE COSTS TO MEDICARE COSTS

In this section, the comparison of resource costs to charges is presented. Charges, and charge derived RCCAC costs, are the resource measures commonly used to describe resource use in health care. While these measures have been used in the past, they have been distorted by reimbursement incentives. In the current environment, charges are the health care equivalent of manufacturers suggested retail price or "MSRP" used in the auto industry. If charges associated with health services were based on a single mark-up factor, then relative values developed from charges could be used to determine payment levels. Procedure-specific comparisons between hospital based resource costs and Medicare costs are presented in this section.

HCFA's implementation of an outpatient prospective payment system should result in appropriate provider incentives. As discussed in Chapter 1, appropriate provider behavior is encouraged if payment rates reflect resource use. If payment rates are set too high for some procedures or services and too low for others, providers will have incentives to provide some services excessively and others infrequently. Payment rates were established for Medicare's inpatient prospective payment system by using hospital charges as surrogate measures of resource use. Inpatient charges, however, are not necessarily accurate measures of resource use. Outpatient charges are influenced by the same forces that distort inpatient charges. In addition, outpatient charges are subject to even greater biases because there is typically only one or two charges for an outpatient case, in comparison to 30 or more individual charges for services for inpatient cases. Distortions inherent in charges for specific services may be offset if several charges are included in the calculation of total charges. There is no opportunity for such offsets for outpatient cases. As a result, use of charges to set relative weights for outpatient payment may result in distortions that cause undesired provider responses. The extent of the problem is presented in the analysis.

In Exhibit 6-10, Medicare charges are compared to hospital resource costs. It is difficult to determine a trend in the relationship from the exhibit. The ratio of resource cost to Medicare costs ranges between .29 for CPT-4 code 49505, repair of inguinal hernia, to .63 CPT-4 52000, cystourethroscopy.

The relationship between Medicare charges and hospital total resource costs is only marginally less significant than that between the Medicare costs and hospital total resource costs

HOSPITAL TOTAL RESOURCE COSTS VS. HOSPITAL MEDICARE CHARGES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES

CPT CODE	PROCEDURE	HOSPITAL MEAN TOTAL RESOURCE COST	STANDARD DEVIATION OF HOSPITAL TOTAL RESOURCE COST	HOSPITAL MEDICARE CHARGE	RATIO OF MEAN RESOURCE COST TO MEDICARE CHARGE	DIFFERENCE BETWEEN MEAN RESOURCE COST AND MEDICARE CHARGE
66984	Extracapsular cataract removal with insertion of intraocular lens	\$947.52	\$260.67	\$2,506.00	0.38	(\$1,558.48)
45378	Colonoscopy, diagnostic	\$345.41	\$134.69	\$637.00	0.54	(\$291.59)
45385	Colonoscopy, for removal of polypoid lesion	\$381.03	\$123.00	\$745.00	0.51	(\$363.97)
49505	Repair of inguinal hernia, age 5 or over	\$571.91	\$147.01	\$1,967.00	0.29	(\$1,395.09)
43239	Upper GI endoscopy, for biopsy or collection of specimen	\$343.54	\$99.40	\$639.00	0.54	(\$295.46)
43235	Upper GI endoscopy, diagnostic	\$301.42	\$81.76	\$555.00	0.54	(\$253.58)
19120	Excision of cyst	\$542.56	\$166.87	\$1,353.00	0.40	(\$810.44)
52000	Cystourethroscopy (separate procedure)	\$428.59	\$145.02	\$672.00	0.63	(\$247.41)
45380	Colonoscopy, for biopsy	\$389.89	\$137.68	\$678.00	0.58	(\$288.11)
	ALL SURGICAL PROCEDURES	\$522.63	\$838.17	\$982.59	0.53	(\$459.96)

Sources

Hospital Resource Costs - CHPS Outpatient Resource Costing Data Base

Hospital Medicare Charges - 1992 Medpar Hospital Outpatient Claims Data

discussed in 6.2. The correlation coefficient for these two variables is .94, a value that is significant at the one percent level.

The findings from these exhibits are significant for two reasons. First, as was expected, Medicare charges, which are readily available for all services, are found to reflect resource use as measured by resource cost at a relatively less significant level than other measures of costs such as the Medicare costs. Second, and more importantly, it is clear that the use of Medicare charges to set relative values will result in a relatively inequitable distribution of resources across procedures. This same result was found in the analysis of the relationship between Medicare costs and resource costs. Procedures with high Medicare charges will have relative values set too high while lower payment services will have relative values that are too low. While a multiplier to convert relative values to payment rates can be determined to insure that Medicare expenditures do not grow in aggregate, the potential detrimental impact on individual providers is clear. The inability of payments based on Medicare charges to cover the resource costs of low Medicare charge procedures will act as a disincentive to provide those services. Similarly, economic incentives to provide high Medicare charge services will create pressure to increase utilization of those procedures. The analysis makes it clear that Medicare charges, even if reduced to relative values or to costs through cost to charge ratios, have limitations as the basis for payment level determination.

6.6 ALTERNATIVE MEASURES OF RELATIVE WEIGHTS

Relative values developed from total hospital resource costs, direct hospital resource costs and Medicare costs are presented in this section. The relative values for total hospital resource costs include both direct and indirect cost components. Direct costs have been used to develop a separate set of relative values which should vary with respect to case mix more than total costs, due to the buffering effect of indirect costs. Indirect costs are, by definition, allocated to procedures. Alternative methods of allocating indirect costs could result in more or less indirect costs being associated with a specific procedure. By presenting direct cost relative values, resource cost relative values can be examined independent of allocation decisions.

Medicare cost relative values and total resource cost relative values for hospitals for selected high volume procedures are presented in Exhibit 6-11; hospital direct resource cost relative values and Medicare cost relative values are presented in Exhibit 6-12. Medicare values range from .54 for CPT-4 43235 to 2.62 for CPT-4 66984, extracapsular cataract removal with lens insertion. The resource cost relative values have a narrower range of values than Medicare costs. Total resource costs relative values for these procedures range from .58 for CPT-4 43235, diagnostic upper G.I. endoscopy, to 1.81 for CPT-4 66984, extracapsular cataract removal. The direct resource cost relative values range from .66 for CPT-4 45378, diagnostic colonoscopy, to 2.28 for CPT-4 66984.

For five of the nine procedures, there was no difference between the Medicare cost relative value and the total resource cost relative value. For three procedures, there was higher Medicare cost values, and for one procedure only, higher hospital total resource cost relative

**HOSPITAL TOTAL RESOURCE COST RELATIVE VALUES
VS. HOSPITAL MEDICARE COST RELATIVE VALUES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	HOSPITAL TOTAL RESOURCE COST RELATIVE VALUE	STANDARD DEVIATION OF HOSPITAL TOTAL RESOURCE COST RELATIVE VALUE	MEDICARE COST RELATIVE VALUE	DIFFERENCE BETWEEN RESOURCE COST AND MEDICARE COST RELATIVE VALUES	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER HOSPITAL RESOURCE COST RELATIVE VALUE	HIGHER MEDICARE COST RELATIVE VALUE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	1.81	0.50	2.62	(0.81)		✓	
45378	Colonoscopy, diagnostic	0.66	0.26	0.64	0.02			✓
45385	Colonoscopy, for removal of polypoid lesion	0.73	0.24	0.75	(0.02)			✓
49505	Repair of inguinal hernia, age 5 or over	1.09	0.28	2.02	(0.93)		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	0.66	0.19	0.63	0.03			✓
43235	Upper GI endoscopy, diagnostic	0.58	0.16	0.54	0.04			✓
19120	Excision of cyst	1.04	0.32	1.37	(0.33)		✓	
52000	Cystourethroscopy (separate procedure)	0.81	0.28	0.70	0.11	✓		
45380	Colonoscopy, for biopsy	0.75	0.26	0.69	0.06			✓

Sources

Hospital Resource Cost Relative Values - CHPS Outpatient Resource Costing Data Base

Medicare Cost Relative Values - 1992 Medicare Hospital Outpatient Claims Data

**HOSPITAL DIRECT RESOURCE COST RELATIVE VALUES
VS. HOSPITAL MEDICARE COST RELATIVE VALUES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	HOSPITAL DIRECT RESOURCE COST RELATIVE VALUE	STANDARD DEVIATION OF HOSPITAL DIRECT RESOURCE COST RELATIVE VALUE	MEDICARE COST RELATIVE VALUE	DIFFERENCE BETWEEN RESOURCE COST AND MEDICARE COST RELATIVE VALUES	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER HOSPITAL RESOURCE COST RELATIVE VALUE	HIGHER MEDICARE COST RELATIVE VALUE	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66964	Extracapsular cataract removal with insertion of intraocular lens	2.28	0.63	2.62	(0.34)		✓	
45378	Colonoscopy, diagnostic	0.66	0.16	0.64	0.02			✓
45385	Colonoscopy, for removal of polypoid lesion	0.75	0.15	0.75	(0.00)			✓
49505	Repair of inguinal hernia, age 5 or over	1.17	0.21	2.02	(0.85)		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	0.76	0.15	0.63	0.13	✓		
43235	Upper GI endoscopy, diagnostic	0.70	0.10	0.54	0.16	✓		
19120	Excision of cyst	0.98	0.17	1.37	(0.39)		✓	
52000	Cystourethroscopy (separate procedure)	0.93	0.21	0.70	0.23	✓		
45380	Colonoscopy, for biopsy	0.74	0.17	0.69	0.05	✓		

Sources

Hospital Resource Cost Relative Values - CHPS Outpatient Resource Costing Data Base

Medicare Cost Relative Values - 1992 Medicare Hospital Outpatient Claims Data

values. Direct cost relative values were generally significantly higher than the Medicare relative values; four procedures had statistically higher values for the hospital direct cost relative values. Three had higher Medicare relative values; these procedures are the same three as were found in the total resource cost comparison.

Differences between the resource costs relative values are less than the difference between resource costs and RCCAC Medicare costs. This indicates that alternative allocation methods for indirect costs will not substantially change the results of the analysis.

6.7 COMPARISONS OF STUDY ACTIVITY TIMES AND ALTERNATIVE SURVEYS

The amount of time required to perform a procedure is an important indicator of resource use. In addition, time was used as the basis for allocating indirect overhead cost to procedures and visits. For some activities, namely procedures performed in an operating room and visits, alternative sources of time can be identified. In this section, time estimates developed in this study are compared to two alternative sources. For procedures, New York State's Ambulatory Surgery Data Abstract Project (ASDAP) is used as a basis for comparisons of operating room time. The ASDAP data base includes data on all ambulatory surgery procedures performed in New York State since 1984. Currently, approximately one hundred thousand procedures per year are added to the data base. The ASDAP data base was used as a model by NCHS in its development of an ambulatory surgery survey which is now being implemented. The ASDAP data is ICD9 based and was crosswalked to CPT-4 for purposes of the comparison.

For medical visits, the National Center for Health Statistics' National Ambulatory Medical Care Survey (NAMCS) is used. NAMCS is a probability sample survey of visits to physician offices in the United States. Included are all visits to non-federal Doctors of Medicine and Doctors of Osteopathy in all specialties except radiology, pathology and anesthesiology. All visits to the offices of these physicians for medical care are included in the sample universe. The gross sample for a typical year includes 3,000 physicians and 40,000 patient visits. The physicians and staff provide data for a sample of their patient visits during a randomly assigned one-week reporting period. Data collected include the patient's demographic information and medical problems, and the physician's treatments, diagnoses and disposition decisions. Data on the "duration of visit" are obtained based on the estimated time the patient spends in direct contact with the physician. Other patient care time is not included in the estimate such as patient waiting time, time spent by the physician's staff, and time spent by the physician not directly in the presence of the patient.

The use of these alternative sources, with large sample sizes and recognized validity, can be used to evaluate the time related finding of this study.

Comparisons of time estimates are important for three reasons. First, for operating room procedures, the consumption of resources is time dependent, i.e., anesthesia and equipment are consumed in relationship to time. Second, for both procedures and medical visits, labor costs are

calculated using procedure or visit time. Finally, as was mentioned previously, time was also used to allocate indirect costs to specific services.

In Exhibit 6-13, the comparison of study O.R. time estimates and ASDAP means are presented. In general, the operating room times were significantly higher for the hospital resource data than the ASDAP data for the nine procedures studied. Interestingly enough, when considered together, all surgical procedures were identified as entailing more time with the ASDAP estimates than with the resource cost data. These two time measures are positively related; the correlation coefficient for these two variables is .72, which is significant at the 2 percent level. It will be possible to reexamine these comparisons and the resulting costs when the NCHS ambulatory surgery survey results are available.

A comparison of medical visit times and NAMCS times is presented in Exhibit 6-14. The significant differences between the study times generated in outpatient clinics and NAMCS times are due to measurement of different variables. This study measured time that the patient was in an examining room while NAMCS measures only physician contact time. This difference cannot be reconciled, and in fact, is confirmed when the correlation coefficient is calculated. The correlation coefficient for these two variables is .25, a value that is significant only at the 40 percent level. This indicates that there is not a relationship between these two variables. The analysis is presented only to provide an understanding of the difference between resource cost analysis times and NAMCS times.

**HOSPITAL MEAN RESOURCE OPERATING ROOM TIMES VS. ASDAP TIMES,
SELECTED HIGH VOLUME AMBULATORY SURGERY PROCEDURES**

CPT CODE	PROCEDURE	MEAN RESOURCE OPERATING ROOM TIME	STANDARD DEVIATION OF RESOURCE OPERATING ROOM TIME	ASDAP TIME	DIFFERENCE BETWEEN OPERATING ROOM TIME AND ASDAP TIME	STATISTICAL SIGNIFICANCE, 90 PERCENT CONFIDENCE LEVEL		
						HIGHER RESOURCE OPERATING ROOM TIME	HIGHER ASDAP TIME	NO STATISTICALLY SIGNIFICANT DIFFERENCE
66984	Extracapsular cataract removal with insertion of intraocular lens	71 91	20 70	62 20	9 71	✓		
45378	Colonoscopy, diagnostic	50 11	22 22	41 20	8 91	✓		
45385	Colonoscopy, for removal of polypoid lesion	61 24	16 41	43 00	18 24	✓		
49505	Repair of inguinal hernia, age 5 or over	57 56	16 21	74 20	(16 64)		✓	
43239	Upper GI endoscopy, for biopsy or collection of specimen	38 07	10 08	33 10	4 97	✓		
43235	Upper GI endoscopy, diagnostic	33 75	5 76	33 10	0 65			✓
19120	Excision of cyst	60 65	11 24	51 70	8 95	✓		
52000	Cystourethroscopy (separate procedure)	33 27	10 48	29 20	4 07	✓		
45380	Colonoscopy, for biopsy	60 19	20 78	41 20	18 99	✓		
	ALL SURGICAL PROCEDURES	56 26	49 96	60 01	(3 75)		✓	

Sources

Hospital Resource Operating Room Times - CHPS Outpatient Resource Costing Data Base

ASDAP Times - 1992 New York State Ambulatory Surgery Data Abstract Project

MEAN RESOURCE MEDICAL VISIT TIMES VS. NAMCS TIMES,
SELECTED HIGH VOLUME MEDICAL VISITS

ICD-9 CODE	DESCRIPTION	MEAN RESOURCE VISIT TIME	STANDARD DEVIATION OF RESOURCE VISIT TIME	NAMCS TIME	RATIO OF MEAN RESOURCE VISIT TIME TO NAMCS TIME	DIFFERENCE BETWEEN RESOURCE VISIT TIME AND NAMCS TIME
250.00	Diabetes mellitus - without mention of complication	44.41	21.42	18.00	2.47	26.41
278.0	Obesity and other hyperalimentation - obesity	32.08	23.40	18.00	1.78	14.08
272	Disorders of lipid metabolism	35.67	27.38	16.00	2.23	19.67
599.0	Other disorders of urethra and urinary tract	38.85	22.77	16.00	2.43	22.85
585	Chronic renal failure	44.50	30.59	9.00	4.94	35.50
599.7	Other disorders of urethra and urinary tract - hematuria	55.00	30.22	19.00	2.89	36.00
788.2	Symptoms involving urinary tract - retention of urine	40.29	21.17	21.00	1.92	19.29
600	Hyperplasia of prostate	27.86	11.56	18.00	1.55	9.86
601.9	Inflammatory diseases of prostate - prostatitis unspecified	31.50	16.47	17.00	1.85	14.50
429	Acquired immunodeficiency disease	65.00	50.00	21.00	3.10	44.00
280.9	Iron deficiency anemias - unspecified	41.07	20.68	18.00	2.28	23.07
281.9	Other deficiency anemias - unspecified	42.08	20.72	12.00	3.51	30.08
710.0	Diffuse diseases of connective tissue - systemic lupus erythematosus	48.07	18.89	23.00	2.09	25.07

Sources

Resource Visit Times - CHPS Outpatient Resource Costing Data Base

NAMCS Times - National Center for Health Statistics

7. SUMMARY

7. SUMMARY

7.1 INTRODUCTION

Three issues that build upon the data that were presented in earlier chapters are addressed in this chapter. First, the limitations of the study are discussed. The constraints of the study sample are described, the need for a more comprehensive investigation of procedure combinations is discussed and the need to examine differences in costs across sites in greater detail is reviewed. The second part of the chapter identifies additional areas of research to address the constraints that have been identified and to build a greater understanding of the differences in indirect costs across sites. The final section of the study is devoted to a discussion of the study's data base and its possible uses.

7.2 LIMITATIONS OF THE STUDY

As noted, three limitations of the study have been identified:

- constraints of the study sample size,
- limitations in the study of procedure combinations, and
- need for additional analyses of differences in costs across sites.

The focus of the study's sample design is on the procedures selected for study. In Chapter 2, the confidence limits of the sample on a CPT-4, ICD9 and APG basis were described. The representativeness of the facility sample was also described. Review of these data identifies two limitations. First, although the samples of hospital outpatient departments and ambulatory surgery centers were randomly selected, a convenience sample of physician practices was used. The conduct of this study in physician offices was intended as exploratory, rather than definitive. Physician offices were selected because they were located in the same communities as hospitals or ASCs that were selected and only group practices were studied. Furthermore, only selected specialties were included in the physician office sample. For these reasons, costs identified for procedures and visits in physician offices should be viewed as the product of an exploratory effort to examine opportunities to collect resource cost data in an office setting rather than a definitive study of the costs of physicians' practices. The direction of the findings for physician offices is, however, worthy of note. Procedures and visits in physician offices were found to be completed at a consistently lower cost than in the other settings, although the statistical significance of this result is difficult to confirm given the constraints of the sample. For this reason, it is important that the findings for ASCs and hospital OPDs not be considered as representative of physician offices. A comprehensive study of the costs of physician practice expense is required.

The second limitation of the study sample is in the number of CPT-4 and ICD9 codes for which a sufficient sample size was not obtained. Sufficient sample sizes were obtained for only the largest volume procedures. Difficulties were encountered with procedures and visits that

occur less frequently. Costs were obtained for these procedures and visits, but confidence levels are not adequate to identify the presence of statistically significant relationships. Although these limitations in the sample exist, data at appropriate confidence levels are available for some high volume procedures. Most importantly, addition of even a moderate number of facilities to the study sample would have little effect on confidence levels for most of the procedures that are inadequately represented. The procedures for which sample sizes are insufficient occur too infrequently for an additional data collection effort to be useful, unless it was a considerably larger effort than the one undertaken. An alternative approach to identifying the costs of these low volume procedures is discussed in the next section.

Problems in the identification of costs of procedure combinations were discussed in Chapter 5. Only three combinations of ambulatory surgical procedures and one combination of radiology procedures were discussed. The analysis revealed that the issue of differences in costs when more than one procedure is performed during a visit is not significant for radiology procedures when different equipment is used, but is significant for ambulatory surgery procedure combinations. Additional procedure combinations need to be identified and investigated.

The analysis of the costs of procedure combinations was conducted on an exploratory basis, without the clinical input that could assure the definitiveness of the findings. The consistency of findings, however, leads to the likelihood that rules regarding the conduct of more than one procedure during a visit can be validated. Additional investigation to identify and confirm rules, however, is required. Such an investigation requires the identification of resource profiles for procedure combinations that occur more frequently and the costing of the profiles once they are developed. The approach to be used for such an effort is discussed in the next section.

Analyses of the differences in the costs of procedures conducted in alternative settings revealed a wide distribution of costs for some procedures and a limited distribution for other procedures. For example, there were fewer differences in the costs of eye surgery among hospitals and ASCs, but there were substantial differences in the costs of procedures that use traditional surgical techniques, e.g., incisions and excisions. Differences were identified and discussed in Chapter 4 but additional efforts are required to arrive at a definitive understanding of the reasons for variations. Differences in labor, supplies, equipment, pharmaceuticals and anesthesia are identified, but reasons for these differences are more difficult to identify. It is useful to understand whether a difference in cost is related to a difference in quality, but such an investigation requires clinical evaluation of different patterns represented in resource profiles.

7.3 ADDITIONAL RESEARCH

The discussion of the constraints of the study is useful for identifying additional research on resource costs of outpatient services. Each of the three constraints that were identified should be subjects of additional research. In addition, there is a need for additional research on variations in indirect cost.

Direct costs for all procedures and codes can be calculated without substantial additional field work. The study used clinicians to identify preliminary resource profiles which were then validated by providers included in the study sample. Unit cost data were gathered from each provider to complete the cost measurement process. If clinical panels developed resource profiles for procedures and visits not included in the study, unit costs of resources that were identified for the providers in the original study sample could be used to price most, if not all, of the resources required to perform additional procedures and visits. The clinical panels developed for this task need to include a larger number of physicians and nurses than the panels used for this study because of the need to establish valid profiles without the opportunity for their review by providers in the field. Panels have been used for this purpose for other efforts and such approaches have been effective. It must be remembered that only lower volume procedures and visits would need to be studied. The product of this effort would be a comprehensive data base of resource costs for all relevant CPT-4 and ICD9 codes.

A similar approach is required to improve the analysis of the costs of procedure combinations. Clinical panels are required to identify procedure combinations worthy of study and to then identify resource profiles for each combination. Unit cost data from the study's existing data base can be used to price the procedure combination. This analysis will reveal whether the pattern identified for the three procedure combinations discussed in Chapter 5 is a consistent pattern across all combinations or whether there are exceptions to the pattern. The use of the outpatient resource costing unit cost data base will provide definitive findings for this issue if resource profiles for combinations of procedures are identified. Additional research can also identify the costs of combinations of medical visits.

Considerable additional research can be conducted to determine the causes of differences between facilities that provide outpatient services. Research presented in Chapter 4 focused on differences caused by volume and case-mix. Both volume and case-mix were found to have limited, if any, impact on the cost of outpatient services. Two other related issues need to be investigated. It is likely that physician preference has a substantial impact on cost within a facility and collectively, for an entire facility. This study used resource profiles that were specific to a facility, but which aggregated differences in physician preferences. Differences in physician preferences can be substantial within a facility and need to be investigated to determine if individual physician preferences distort facility-wide profiles.

Experience of surgeons is likely to affect the time required to complete surgery. Analyses of data from the New York ASDAP data base (which was discussed in Chapter 6) allows comparisons of operating room time by surgeon. Comparisons completed for this study have revealed substantial differences among surgeons for the same procedure. Additional analyses revealed a relationship between the frequency with which a specific surgeon performs a procedure and operating room time. There is a need to determine the extent to which differences in surgeon experience affect cost. Although case-mix may not substantially affect costs, physician-mix within a facility may have an effect.

Analyses of differences in resource profiles can identify causes for differences in costs. In addition, such analyses can be used to identify issues relating to quality of services. It is not

clear whether differences in costs relate to differences in quality, i.e., whether increased costs have a positive or negative relationship to quality. It will be useful for the clinical panels to review the resource profiles prepared by facilities in the study to determine whether differences in profiles are related to quality. Data included in the study data base can be used for this purpose as can additional data that might be collected to investigate differences in physician approaches to surgery. This approach can lead to the completion of standard profiles which can be priced using mean unit costs. If it were conducted comprehensively, such an effort would produce standard costs for all procedures of interest.

Similar investigations of indirect costs need to be completed. Data collected from hospitals revealed substantial differences in indirect costs that are not related to volume. Different patterns of indirect cost in hospitals implies variations in efficiency still exist, despite the changes in hospital environments that have occurred. Data collected in this study provide a foundation for identifying differences in indirect cost both among like types of facilities and across different facility types. Such analyses will provide insights regarding standards of efficiency.

7.4 VALUE OF THE STUDY DATA BASE

As data were collected for this study, it became clear that there were little data on the costs of specific outpatient services. The lack of a generally accepted outpatient classification system, combined with cost accounting emphases on inpatient services, has led to a dearth of understanding of the costs of outpatient care. The products of this study can be used to address two issues related to this problem. First, the study's approach suggests a method for measuring the costs of outpatient services on a CPT-4 code-specific basis that hospitals can use to identify their own costs. Second, the study data base can be used to study measures of hospital efficiency.

The data base has been provided to HCFA as part of its continuous research directed effort toward measuring resource costs for medical services provided in ambulatory clinical settings. It provides insights into differences in costs among procedures and for the same procedures across different provider types and why differences in costs occur. It will allow HCFA to further its research effort.

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